WAR ELEPHANTS

KONSTANTIN NOSSOV

ILLUSTRATED BY PETER DENNIS

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WAR ELEPHANTS

INTRODUCTION

The elephant is the only animal that humankind has used as a significant combatant, systematically and on a large scale. Horses were never actual fighters, rather vehicles for carrying soldiers in battle. Although war dogs were active in some conflicts, they did not influence the outcome. Furthermore, horses and dogs are domestic animals, while war elephants were wild animals: each was specially caught and trained.

Elephants were famous participants in the wars of the Mediterranean. Here their role as what can be described as 'living tanks' was determined both by their effectiveness and their comparative scarcity. In contrast, elephants in Asian armies were valued highly as war machines, but were greatly outnumbered and outlasted by ordinary draught elephants. In the 18th–19th centuries, the British used hundreds of elephants as artillery haulers; the Royal Engineers employed them in the Indian Army until 1895. During World War II, both the British and Japanese readily resorted to the services of these animals as excellent engineers in building bridges and roads through the jungles of Burma. Even during the Vietnam War elephants served as pack animals transporting vital supplies to communist fighters in the north, and more than once fell victim to US air attacks.

The elephant is a naturally peaceful and mild animal, though of course there are always exceptions to the rule. Throughout history, the strongest beasts showing inclination for violence were chosen for battle and turned into killing machines by special training. Almost all war elephants were males; bigger and more pugnacious than their female counterparts, they also had tusks to use as weapons in combat. Females, with small tusks (if any) and naturally less aggressive, generally served as haulers, although there were exceptions.

In ancient times elephants inhabited vast territories in South and Southeast Asia, West Asia and Africa. Man first hunted them, but also began to tame them. Elephants were probably already tamed in Mohenjodaro, one of the centres of civilization in the Indus Valley, by the 24th–18th centuries BC. In the Ancient Near East elephants were mostly hunted. In Syria and Mesopotamia herds of elephants were nearly gone by the 8th century BC, either as a result of climate change or man's insatiable lust for ivory, and in the 4th century BC Alexander the Great's advancing army encountered no wild elephants in West Asia. Demand for ivory resulted in the disappearance of elephants in Egypt as early as the 3rd–2nd millenniums BC, although they lasted longer in other North African areas. It was after Carthage fell in 146 BC,

Elephant wrestling (*sath-maru*) was a favourite entertainment of the Indian nobility. Before the battle, the elephants were rubbed in butter and given a dose of special drugs. The elephants fought over a low barrier, preventing them from flanking each other. This relief on Shringar Chanwari in Chittorgarh, India, shows each elephant carrying two men and no tower or *howdah*. The elephants are wound round with ropes, which serve as a girth and also help the riders to climb onto the animal's back.

and the region was turned into a Roman province, that Romans began purposefully chasing elephants for public entertainment and for ivory, which drove North African elephants to extinction towards the late 2nd century AD.

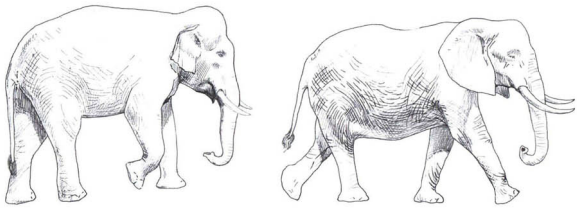
THE ELEPHANT

Types of elephants and their peculiarities

The elephant is the planet's largest land animal, and there are two species: African (*Loxodonta africana*) and Asian or Indian (*Elephas maximus*). The African elephant has large, flapping ears, a concave back and impressive tusks. The Asian species has relatively small ears, a convex back and smaller tusks; it inhabits the territories of today's India, Pakistan, Myanmar, Thailand, Vietnam and the islands of Sri Lanka and Sumatra.

Ancient authors stated unanimously that Indian elephants were bigger and stronger than African or Libyan, as they called them. African elephants were considered to be afraid of their Indian equivalents and reluctant to fight them. The battle at Raphia (217 BC; see below), in which the African forest elephants of Ptolemy IV (r. 221–205 BC) of Egypt refused to fight with the Indian elephants of Antiochus, seems to confirm this assertion. Therefore, in choosing war elephants, the ancients preferred Asian to African species.

Today, however, comparison in size of African and Asian elephants gives diametrically opposite results: Africans are 3–4m (9ft 10in–13ft 1in) tall and weigh 4–7 tons (4,000–7,000 kg), Asians are 2–3.5m (6ft 6in–11ft 6in) tall and weigh 2–5 tons (2,000–5,000 kg). The seeming discrepancy between actual size and combat value does have an explanation: the African elephant has two subspecies – the savannah or bush elephant, which is indeed the biggest elephant on earth, and the forest elephant, which is much smaller: 2–2.5m (6ft 6in–8ft 2in) tall and weighs 2–4.5 tons. Thus, the average forest elephant is smaller than the Indian one, which, in turn, is smaller than the savannah elephant. (Females of each species are also smaller than males.) Today forest elephants live in Central and West Africa, but they were once seen as far north as the African shores of the Mediterranean.



Species of elephants: The Asian or Indian elephant (*Elephas maximus*) is on the left, the African (*Loxodonta africana*) on the right. The African has large, flapping ears, a sagging back and formidable tusks. Its Asian counterpart has relatively small ears, a bulging back and smaller tusks.

Pure 'white', albino elephants commanded the highest value owing to their extreme rarity. Elephants were often called 'white' when they had a pale coloration at certain points on the body. Such elephants were believed to be favoured by the gods and were often claimed by Asian kings. To be acknowledged as white, an elephant required not only beautiful coloration, but it also had to undergo special testing of its physique and temperament.

With its powerful trunk, an elephant can carry loads up to 500kg (1,102lb) for short distances. Sources even recall an elephant lifting a horse and rider and smashing them onto the ground. Babur, the first Mughal emperor, who reigned in the 16th century AD, declared that two or three elephants could haul a huge *kazan* bombard, a task that otherwise needed 400 or 500 men. An elephant's strength is matched by its appetite. The same emperor recalled that an elephant ate the same volume of food as 15 camels.

In terms of movement, elephants are incapable of trotting or galloping. They can, however, walk at speeds of up to 16km/h (10mph). They are able to move along cross-country terrain with ease, surmounting steep slopes or embankments, a talent that made them well suited to military logistics as well as combat.

Catching elephants

Elephants live up to 70–80 years, and although the shock of seizure and years of captivity frequently shortened their lives, it was still considered easier to catch them than attempt to rear them: elephants bear only one calf, with the gestation period lasting 18–24 months. Moreover, a calf feeds on its mother's milk for six years. According to Kautilya, the author of the ancient Indian treatise *Arthashastra* (dating between the 4th century BC and the 1st century AD), 20 years was the minimal 'call-up' age for a war elephant and 40 was considered the optimum age for combat, while a 30-year-old elephant was considered mediocre because fully grown up elephants were more experienced and harder to put to flight. Thus it took about 22 years to rear a war elephant, for many years keeping both mother and calf and feeding them enormous quantities of food. Catching adult animals was therefore the cost-effective and less time-consuming preference. Elephants caught in the wild were also believed to be more naturally aggressive.

In Asia, there were two principal methods of catching wild elephants. The first consisted of choosing a flat site and surrounding it with a deep ditch measuring up to 9.3m (10 yards) wide by 7.4m (8 yards), boarded with embankments. The single entrance into the fenced space was across a temporary bridge camouflaged with earth and grass. Two or three female

Indian miniature depicting a hunt. The two elephants in the centre have different equipment. The one on the left is ridden by a ruler in a *howdah*. The one on the right is not carrying a *howdah* and the warrior is simply sitting on the caparison.

elephants were placed inside and their smell made male elephants head for the enclosure and rush inside. The bridge was then removed, and the elephants were trapped. Animals that were too young, too old or sick were let go, as were pregnant or feeding females. The rest were tormented with hunger and thirst and, enfeebled, forced to fight with tamed elephants that drivers brought into the trap. The defeated elephants were leashed and had their legs tied.

In an alternative method of capture, a driver would direct a *Koonkie*, a tamed female bait elephant, close enough to a grazing herd for the elephants to smell her. An elephant's ears and nose are much keener than its eye-sight – it can smell a female at a distance, but cannot see a man on her back. The moment a male elephant was willing to follow her, the bait elephant was driven to a place where the wild elephant's leg or neck would be suddenly caught with a rope. This method was more dangerous – annual competitions in Thailand still held today show that in a tug-of-war contest between 100 men and an elephant, the elephant generally always wins.

Whether the above methods were used in North Africa is not known. According to Pliny the Elder, writing in the 1st century AD, elephants were often driven into camouflaged pits where their legs were hit with arrows. Some animals escaped by raking in the earth with their feet or pulling themselves up with their trunks. However, the defeated were starved into obedience.

Hathi Pol or Elephant Gate viewed from inside the citadel of Fatehpur Sikri takes up the centre of the photograph. The big building on the left of the gate is an elephant stall – although very high, it is a one-storey building supplied with four tall gates on each side.

Elephants are naturally peaceful, mild and very clever creatures. It took years to train them into killing machines. Without special training, elephants would hurriedly leave a battlefield at the first opportunity, fully aware of the potential danger that awaited them.

Taming and training

Unlike Asian and African forest elephants, African bush elephants are untameable and were not used for war. A newly caught elephant was tied to a post in a stall together with tamed elephants and gradually lost its aggressiveness by their example. If it persisted in its defiance, it was starved into mildness. Taming was completed when the elephant let a man get onto its back.

Then training began. In India the first decision was whether an elephant was to be a draught animal or a fighting machine. The latter received a more sophisticated training. Apart from learning the obedience and movements expected from a draught elephant, war elephants also had to possess a combative character and certain specific skills: Kautilya mentions elephants being trained to jump over fences, ropes or pits, make turns and serpentine movements, trample down and kill enemies, fight other elephants and attack fortifications. Indian medieval treatises refer to special dummies used for teaching elephants the art of killing. An elephant was also trained to endure pain and not to shy away from loud sounds. Tied to a post it was hit and pricked with swords, spears and axes (without being seriously injured) under the thunder of drums, kettle-drums, conches or tam-tams. In the 16th century, trainers in Sri Lanka slaughtered animals before their eyes to accustom elephants to the sight of blood.

The elephant's driver (*mahout*) was a person of major importance. It was his ability that controlled the elephant's behaviour, and therefore the possible outcome of a battle. Indian drivers were valued above all others in Mediterranean armies. Ancient authors call all drivers 'Indians', even those driving Carthaginian or other non-Indian war elephants. An Indian driver's authority was unquestionable.

Because drivers or masters fed and looked after the animals, many elephants loved their drivers dearly. They sometimes carried their dead riders from the battlefield or rushed to defend them, scorning danger. An elephant is known to decline food and die of hunger after killing his rider in fury – however tame, elephants remain fundamentally unpredictable creatures, and can attack their drivers for no apparent reason.

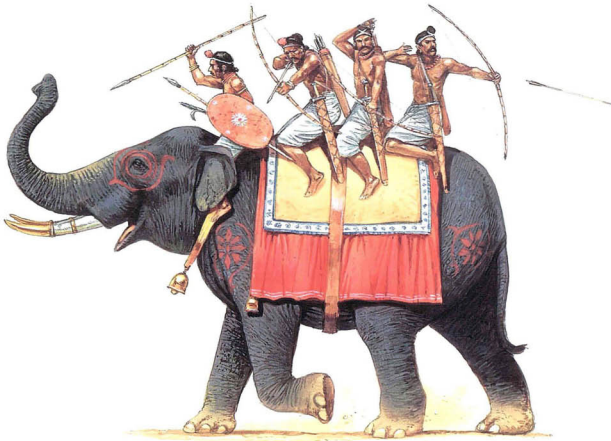
A

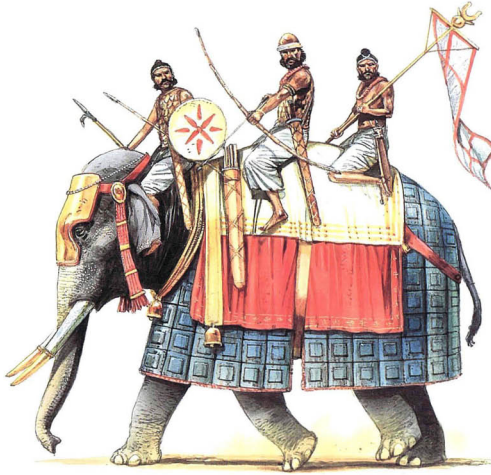
ANCIENT INDIAN WAR ELEPHANTS

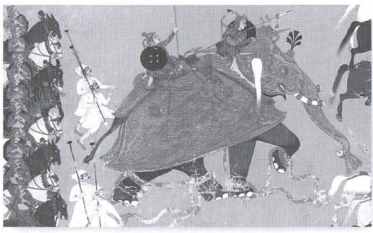
Elephants were widely used in military actions in India from about the mid 1st millennium BC. Little by little these so-called 'living tanks' ousted chariots from the battlefield as more and more noble warriors switched their preference, and until the 18th century AD elephants played a substantial part in Indian warfare. Their numbers are estimated to be in the hundreds or thousands in the armies of different rulers, who all pinned their hopes of victory on their elephant corps and looked upon them as token of victory.

Most ancient authors say nothing about towers on elephants' backs; nor are towers to be found in artworks. The crew usually consisted of 2–4 men, including a driver with an *ankusha* – a pointed goad supplied with a sharp hook. Bows and arrows were common weapons of the crew; javelins and spears were less frequent. The warrior on the croup was often a standard-bearer. Elephants were sometimes covered with armour, but this was expensive. This plate shows one such elephant. The reconstruction is based on plates discovered in Taxila, which date as far back as the turn of the new era.

A







'Maharao Durjansal of Kotah on His Elephant Ranasangar', Rajasthan, India, c. 1750–70. The armour worn by the elephant is probably of scale construction. Even the creature's ears are protected. The driver seeks shelter behind two projections purposely made for his protection. The elephant is armed with scraps of chain tied to its trunk. Its feet are also entangled with chains, which could be tightened and pegged into the ground if the beast became panic stricken. (Courtesy of Philadelphia Museum of Art, photo by Andrea Simon)

INDIAN WAR ELEPHANTS

Historical outline

It is historically proven that ancient people living in the Indus valley knew how to hunt and, possibly, tame elephants. Elephants certainly figure in the collection of Indian religious hymns known as the *Rigveda*, composed in the late 2nd through to early 1st millennium BC, but written down centuries later. However, there is no mention of elephants in combat. At this time, horse-drawn war chariots commanded the battlefield.

Ctesias, a Greek historian of the 5th–4th centuries BC, gives the first concrete evidence of elephants being used in combat. He recorded that the Derbices, a tribe living east of the Caspian Sea, hid elephants in an ambush, then led them in a surprise attack on the cavalry of the Persian king Cyrus, making the cavalry flee. The Derbices received their animals from the Indians, who fought together with them and probably drove the elephants. Elephants in warfare are also mentioned in the ancient Indian epics *Ramayana* and *Mahabharata*, created about the mid 1st millennium BC although not written down until the first centuries AD.

Thus, about the mid 1st millennium BC elephants began their 'war carrier' role in India and the surrounding regions, gradually ousting war chariots from the battlefield. When Alexander of Macedonia invaded India in 327 BC, local armies were equipped with chariots and elephants in comparable numbers (see Table 1). In the dramatic battle at the Hydaspes River in 326 BC, Porus (r. 340–317 BC), king of a small state on the territory of modern Punjab, had war chariots but they did not play a noticeable role, probably because a heavy rain had turned the ground into a mash and chariots could hardly move. Also significant is the fact that Porus was no longer driving a

Table 1. The composition of armies of selected Indian kingdoms around the time of Alexander of Macedonia's Indian campaign (late 4th–early 3rd centuries BC).

The name of the tribe or the king	Elephants	Chariots	Cavalry	Infantry	Source
Prasii and Gangaridae	4,000	2,000	20,000	200,000	Diodorus, 17.93.2
	3,000	2,000	20,000	200,000	Quintus Curtius, 9.2.4
Porus	130	over 1,000	3,000	50,000	Diodorus, 17.87.2
	200	420	6,000	30,000	Arrian, Anabasis, 5.14.6 & 5.15.4
	85	400	4,000	30,000	Quintus Curtius, 8.13.6 & 8.14.2
Calingae	700	–	1,000	60,000	Pliny the Elder, 6.66
King of Modubae, Molindae and others	4,000	–	4,000	50,000	Pliny the Elder, 6.67
Andarae	1,000	–	2,000	100,000	Pliny the Elder, 6.67
Prasii (Mauryan Empire under Chandragupta)	9,000	–	30,000	600,000	Pliny the Elder, 6.68
Chrysei, Parasangae and Asmagi	300	–	800	30,000	Pliny the Elder, 6.73
King of Automula city	1,600	–	5,000	150,000	Pliny the Elder, 6.75
Pandae	500	–		150,000	Pliny the Elder, 6.76
	500	–	4,000	130,000	Arrian, Indica, 8.7

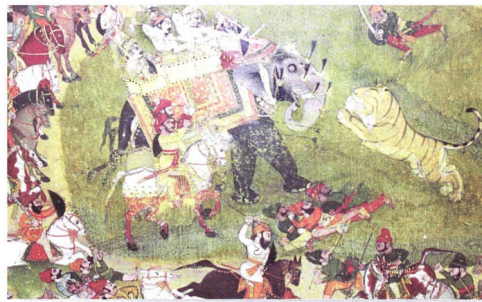
chariot (as was customary for ancient heroes), but a war elephant, a choice showing a distinct switch in priorities. Although chariots lingered in India until the early Middle Ages, they are mentioned only occasionally, while war elephants are universally discussed.

Despite their presence, elephants cannot be given a decisive role at the Hydaspes. At first they inflicted substantial casualties to the enemy infantry, but many elephants were wounded and their drivers killed in a series of clashes with the Macedonians. The elephants grew disobedient and increasingly harmed their own side as well as the enemy. (Because a lot of the elephants were wounded or lost their drivers, the animals became confused and refused to obey humans any longer.) Nevertheless, Indian kings had faith in their invincibility and sought to enlarge elephant corps. Their faith was not necessarily misplaced. Diodorus even believed that Alexander curtailed his march inside India for fear of war with the Gangaridae, an Indian tribal force that could field 4,000 elephants. Chandragupta, another Indian king ruling at the end of the 4th century BC, had an even larger force, with some estimates as high as 9,000 elephants. These figures are sometimes considered to be exaggerations. Two points are worth considering, however. First, Indian armies used numerous pack elephants, which are possibly included in the general figures. Second, historical accounts record that Chandragupta readily granted Seleucus I a force of 500 elephants, testament to the large number he must have had available.

Kautilya unequivocally declares that 'the victory of kings in battles depends mainly upon elephants; for elephants, being of large bodily frame, are able not only to destroy the arrayed army of the enemy, his fortifications and

Howdahs. These elephant seats were used by Indian nobility both when travelling and fighting. A ruler occupied its front, the higher part screened by a raised protective sheet. The rear part was for his loyal guard, often disguised as a fly whisk bearer or, later, an aide-de-camp. The driver or mahout sat astride the elephant's neck in front of the *howdah*. (Junagarh Museum, Bikaner & Mehrangarh Museum, Jodhpur, India)

An Indian miniature of the late 18th century depicts Akbar and his son Jahangir hunting a tiger. Both are in the higher part of the howdah. Their guarding aide-de-camp is just behind them, a bit lower.



encampments, but also to undertake works that are dangerous to life' (*Arthashastra*, II.2.20). Later Indian authors were no less prone to enthusiasm: 'where there are elephants, there is victory'; 'the kingdoms of kings depend on elephants'; 'one elephant, duly equipped and trained in the methods of war, is capable of slaying six thousand well-caparisoned horses'; or 'an army without elephants is as despicable as a forest without a lion, a kingdom without a king or as valour unaided by weapons'.[1]

Elephants were extensively used on medieval India's battlefields. They served Delhi sultans, Mughal emperors, Rajput princes and Vijayanagar Empire rulers. Only the Marathas did not make them a prominent feature of their army.

Medieval Indian armies numbered from several hundred to several thousand war elephants (not counting numerous pack elephants), depending on a ruler's might. Smaller rulers of the 6th century had 500–600 war elephants, but the Delhi sultan Muhammad bin Tughluq (r. 1325–51) is said to have possessed 3,000; Sher Shah Sur, who governed Delhi in 1540–45, owned 5,000 elephants. Emperor Akbar (r. 1556–1605) kept 6,000, though probably not all of these were war elephants. In 1730 Nizam-ul-Mulk

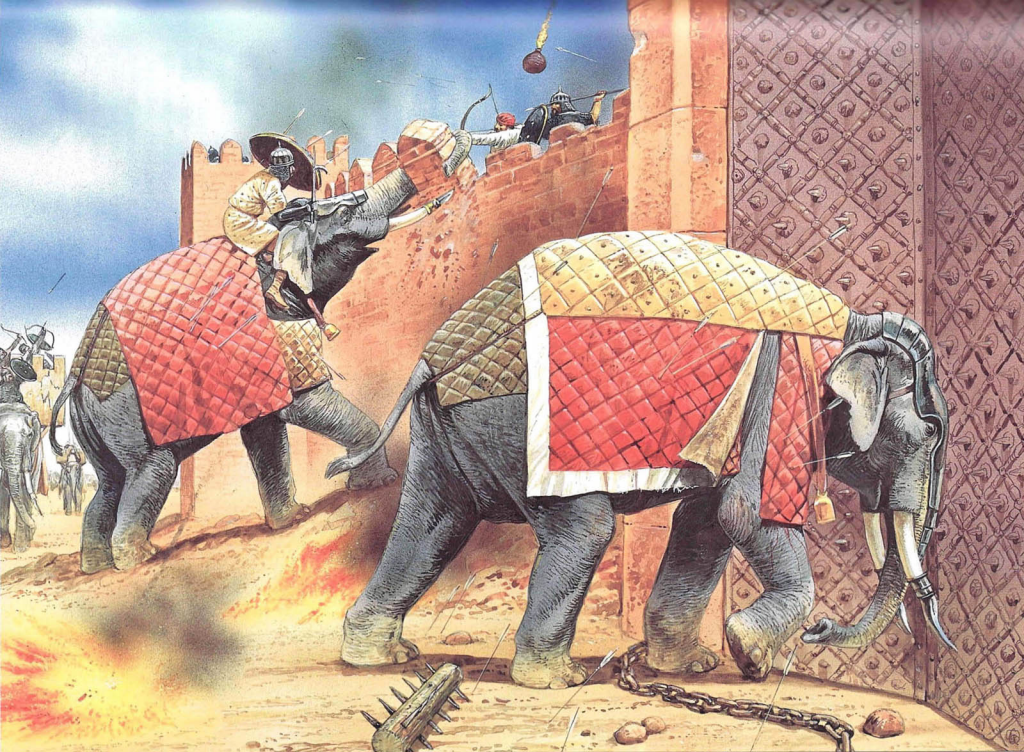
1 After P.C. Chakravarti, *The Art of War in Ancient India* (Delhi, 2003) pp.48–49

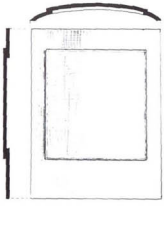
B

MEDIEVAL INDIAN WAR ELEPHANTS

In India, elephants were not only fighters but also siege weapons. Kautilya names the breaking of fortress walls, gates and towers amongst the elephants' important functions. Ancient authors tell us that elephants could pull merlons off a wall with their trunks, or they served as live battering rams to attack castle gates. Consequently, all the defenders' efforts were concentrated on resisting elephants. Successive gates were built at such an angle that an elephant could not attack them at a high speed. A chain was also stretched in front of the gate and the gate's leaves were supplied with sharp iron or teak spikes arranged in horizontal rows. To offer some protection to the animal, an elephant's forehead would be protected with a bronze or steel plate.

This plate shows the siege of a castle as one elephant attacks the gate, and another pulls down the merlons. Behind them stand war elephants carrying towers and crews, ready to repulse a possible counterattack by the besieged. Early medieval images of elephants lack fighting towers. However, the fact that elephants bore towers, at least from the 10th to late 15th centuries, is confirmed by the evidence of several reliable eye-witnesses. According to some sources, the strength of a crew varied from 2 to 14 men (the latter consisting of 12 soldiers and 2 drivers). Large swords were often tied to an elephant's trunk and tusks, and the animal itself was sometimes clad in armour.





Sample of one of the 18 iron plates probably once used in elephant armour, found at Taxila and dating from the 1st century BC to 1st century AD. The plate is 25.4 × 21.6cm (10 × 8.5in). Every plate is slightly bent along its vertical axis and has a projecting central part, which was meant to enhance the protective effect: at a blow the plates spring, weakening the penetration. (After J. Marshall)

(r. 1724–48) of Hyderabad had over 1,000 war elephants, including 225 armoured. The Mughal army possessed 2,000 elephants in 1739; although the number of armoured elephants is unknown.

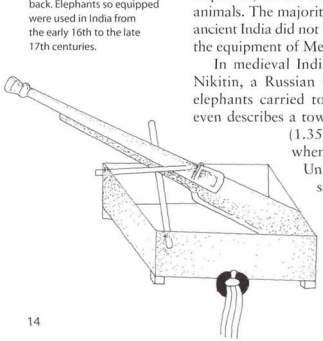
Indian faith in these living tanks was only shaken with the development of firearms. Rifle fire did not usually stop an elephant attack. Cases are known when dozens, even hundreds of bullets hit a poor elephant before killing it. Only an extremely well-aimed bullet could kill an elephant, if it hit a vital point. Artillery is another matter. Big and slow, elephants made excellent cannon targets. European armies operating within South Asia quickly realized that a single shot from a 4-pdr at an elephant carrying the commander could win the day – with the commander dead, an army usually took to flight. Indians unwillingly parted with their faith in war elephants, with the last recorded use of such creatures taking place in the late 18th century, although they continued to be used as draught animals.

Equipment and armament

A war elephant was covered with a caparison, a large square carpet, secured with a girth. The caparison almost invariably had red in its coloration, while the girth was made from thick ropes or chains. An elephant usually wore a little bell on its neck and two more bells often dangled on the front part of the caparison. Elephants were sometimes decorated with additional bells hanging from the caparison or fastened all around the collar. In some pictures an elephant's body is bound with ropes longwise or across, possibly to facilitate the driver getting onto its back. A string of pearls or precious stones often adorned the forehead of the king's elephant. Umbrellas, flags or other objects were sometimes used to decorate or identify an elephant. There is also some evidence that an elephant's head and trunk were painted bright in battle, for a combination of sacramental, aesthetic and martial reasons.

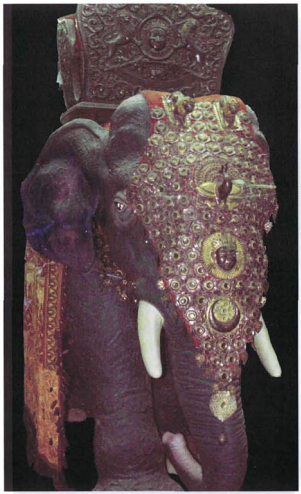
It is not clear when fighting towers were first used on elephants' backs within India. Diodorus and Pliny the Elder both mention them, writing in the 1st century BC and the 1st century AD respectively. In the *Arthashastra*, Kautilya mentions armour, spears and quivers as elephant equipment, but says nothing about towers. The Sanchi reliefs (1st century BC) and Ajanta frescos (5th–7th centuries AD), two of the most detailed illustrated sources for war elephants, do not depict fighting towers and the riders simply straddle the animals. The majority of historical evidence, therefore, seems to suggest that ancient India did not use towers, with Diodorus and Pliny the Elder attributing the equipment of Mediterranean elephants to Indian origin in error.

A *gajnal* of the time of Emperor Akbar (r. 1556–1605). The *gajnal* was a light cannon or large-calibre musket fastened on an elephant's back. Elephants so equipped were used in India from the early 16th to the late 17th centuries.



In medieval India, however, towers were undoubtedly used. Afanasii Nikitin, a Russian traveller visiting India in 1466–72, asserts that war elephants carried towers containing warriors. The treatise *Agni Purana* even describes a tower in detail: 50 fingers (0.95m/3ft 1in) wide, 3 cubits (1.35m/4ft 5in) long, made of wood excreting 'milk juice' when incised, its outside painted and decorated with gold. Unfortunately not a single image of a tower survives. Its size probably depended on the strength of the crew; the larger the tower, the more armed warriors it could hold.

There are no towers in 16th–19th-century Mughal miniatures. Noblemen are usually shown sitting in a *howdah*, a special elephant-seat: its front, higher part, fenced from a driver, was generally for a ruler alone or, say, with his son, while the back part was for



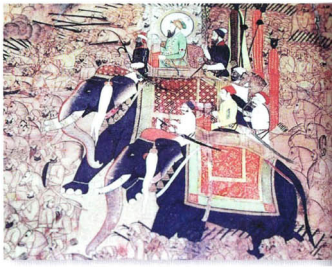
a loyal attendant. Mostly wooden, *howdahs* look like plain boxes in the miniatures. The surviving samples, however, demonstrate a variety of forms and high skill in decoration. Some *howdahs* were covered with magnificent embossing with silver and gilt decor. Less noble warriors usually fought simply sitting on the caparison.

Elephant armour is mentioned by Kautilya and also by Afanasii Nikitin, who recorded that elephants bore watered steel armour. The archaeological site of Taxila, in modern Pakistan, has revealed 18 square iron plates of an average size 25.4 × 21.6cm (10 × 8.5in) and 2mm (0.08in) thick. Too big for man's armour, they presumably protected an elephant or camel. The former is more likely as war elephants were more popular at the time.

Elephant armour does not seem to have been used consistently within India. Some elephants in Mughal miniatures are fully covered, while others have only their heads and parts of trunks protected. Still others, even a king's personal elephant in battle, bore no armour at all. Whether armour was donned or not probably depended on the ruler's estate or his faith in the expediency of cladding the elephant in armour. The armour could be made from a variety of materials: steel scales sewed onto or between layers of cloth or leather; plates and mail; or ordinary quilted cloth or leather. A head protection often comprised special 'ears'. These actually protected the driver, who watched what was happening from behind them. The very tip of the trunk was never covered with armour, as this could cause a loss of mobility and the trunk was necessary for grappling foes.

ABOVE LEFT
'Victory of Kutb al Din Khan at Gujarat' from *Akbar Nama*, c.1590. The elephants in the foreground are fully armoured, while those carrying drummers are unarmoured. The former seem to have scale armour or body protection and brigandine (quilt cloth with metal plates) for the head. (Courtesy Victoria & Albert Museum, London)

ABOVE RIGHT
Armoured elephant with *howdah*, late 19th century, Rajasthan. The armour consists of head protection, necklace and body protection. A thick caparison covers the elephant's sides. (National Museum, Delhi)



ABOVE LEFT
A detail of elephant armour, late 19th century, Rajasthan. The armour is made of flower-shaped plates fastened on cloth and large decorative plates. (National Museum, Delhi)

ABOVE RIGHT
This Indian miniature gives a snapshot of a battle. Surrounded by an army, two elephants occupy the centre. The animals and the people on them are represented larger as compared with the other participants. Moreover, only the elephants and their riders are painted in colour. It is likely that the figures represent a ruler and his son. They sit in simple wooden *howdahs*, with aides-de-camp acting as guards behind.

Afanasii Nikitin recorded large, heavy swords being tied to trunks and tusks for use in battle. Other sources confirm this. In the early 6th century AD, the Chinese traveller Sung Yun noted that swords were tied to war elephants' trunks, as were scythes, maces and even scraps of chain. The latter, in particular, could be a devastating weapon when furiously swinging from an elephant's trunk. Tusk swords were also dangerous and elephants were known to have tossed a victim up and cut him in two with such a weapon. To make them doubly dangerous, the blades were often smeared with poison.

An *ankusha*, a sharpened goad with a pointed hook, was the main tool for managing an elephant. The *ankusha* first appeared in India in the 6th–5th century BC and has been used ever since, not only there, but wherever elephants served man. More frequently, however, a *mahout* uses his feet: in order to turn or stop, he kicks or taps under the elephant's ear. Indian treatises also name certain words a driver pronounced to 'operate' an elephant, such as *de de*, *ehi ehi*, *bhale bhale*, *hijja hijja*, *leca leca*, *curu cuda*.

The crew

Megasthenes, the Greek ambassador to the Indian court, who served around 300 BC, wrote that an elephant's crew consisted of four men: a driver and

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WAR ELEPHANTS OF GREAT MUGHALS, INDIA, 16TH–18TH CENTURIES

The time of the Great Mughals in India (1526–1858) saw a considerable change in the equipment of war elephants. Fighting towers become a thing of the past. People either rode an elephant, as in ancient India, or sat in a *howdah*. *Howdahs* were used by rulers and had two seats: the front, higher seat partitioned from the driver with a high vertical wall, and the back, lower one. The ruler occupied the first seat and his loyal aide-de-camp guard sat behind him.

The most valuable elephants were still protected with armour. Some elephants in Mughal miniatures are all clad in armour; others have only their heads and parts of the trunk protected; still others, even those in combat and carrying a ruler, are completely unprotected. No regularity is apparent from the sources. Probably some rulers considered elephant armour expedient, others did not. Elephant armour was made of plates and mail, as for example in the exhibit in the Royal Armouries; scales sewn on a piece of cloth; brigandine, when steel plates were sewn in between layers of cloth; or just of quilted cloth or leather. The armour also had a peculiarity – protective 'ears', two projections on the elephant's head to protect the driver.

The very tip of the trunk was left bare as it had to remain mobile to grab foes. Various kinds of weapons were sometimes fastened to the trunk – swords, scythes, maces and scraps of chain. Tusk swords were quite formidable weapons too.

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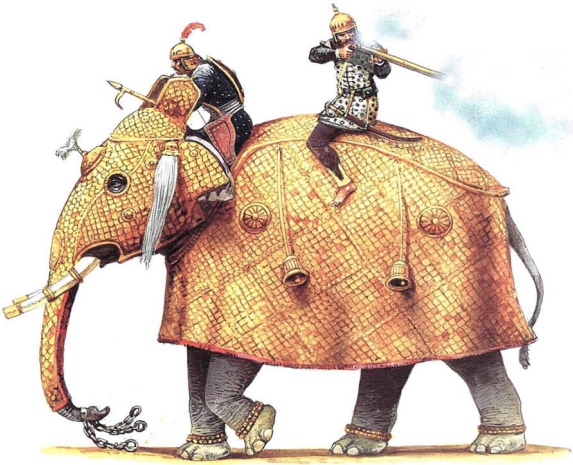

three warriors armed with bows and arrows. Alternatively, the ancient source *Mahabharata* records that there were seven men: two drivers, two archers, two swordsmen and a man with a lance and banner. The Sanchi reliefs and Ajanta frescos, by contrast, show a three-man crew: a driver with an *ankusha*, a supposedly noble warrior behind him and an attendant nearer the tail. Very rarely are two men only depicted on the elephant's back: a driver and a servant on the croup. In this case, the warrior seems to have been driving the animal himself.

A similar variety with regard to crew strength continues in medieval treatises: *Mānasollāsa* (12th century) mentions two warriors; *Agni Purana* – six, consisting of two hook-bearers, two archers and two swordsmen; Afanasii Nikitin (15th century) – 12 armoured men in a tower, with guns and bows and arrows; Louis Barthema (a late 15th-century visitor to the region) counted six warriors; *Ain-i-Akbari* says there were four to six, rarely 12 warriors.

It seems, therefore, that the strength of an elephant crew was arbitrary, from 2 to 14 men (the latter figure being 12 warriors and 2 drivers). The number of personnel depended on factors such as the availability of a tower, the number of trained elephants and soldiers, the character of the combat operation or the task of the elephant corps. Some rulers relied on elephants' destructive ability and did not burden them with a big crew, while others saw them as mobile platforms for towers with archers and did not spare them.

Undoubtedly, only a strong and hardy elephant could carry 12 to 14 men. It is believed that an Asian elephant can carry up to 600–750kg (1,322–1,653lb) on its back. War elephants were probably chosen from among the strongest species. If an Indian warrior weighed approximately 50kg (110lb) (Indians tend towards being more slightly-built than Europeans, and only the lightest would have served in the elephant corps), 12 men would weigh 600kg and 14 men approximately 700kg (1,543lb). To put so many men on an elephant, a tower was needed. Each archer needed minimum $1m^2$ ($10.7ft^2$) space, so a tower for 12 should have been $12m^2$ ($129ft^2$) or 3 × 4m (10 × 13ft), and even made of leather on a frame it could not weigh less than 50kg. Thus, 14 men and a tower (750kg) was the maximum load for a strongest elephant, which could not wear any armour in addition to this heavy weight.

The most popular weapons for an Indian war elephant's crew were bows and arrows, and less frequently spears or javelins. Ancient texts mention other missiles, such as pots of oil or stones. Amazingly, the elephants fighting for a Delhi sultan against Timur (Tamerlane), Turco-Mongol ruler of Samarkand, in 1398 carried discus throwers and even fireworks operators in addition to archers and crossbowmen. This variety was, however, an exception rather than a rule. Some treatises surprisingly mention sword-bearers, although it is impossible to hit an infantryman with a sword from an elephant's back.

Two perfectly preserved early examples of *ankusha* – special goads for elephant driving. One is 65cm (25.5in) long; the other is much shorter. They were found at the archaeological site at Taxila, and date from the 3rd century BC to the 1st century AD. (After J. Marshall)

Firearms soon became an integral part of the armament carried on elephants' backs. The mounted warriors mainly used hand-muskets, but sometimes small-calibre cannon. In India, firing a light cannon from an elephant's back had been practised since the early 16th century. Most commonly camels were used, but until the second half of the 17th century elephants were used as well. There was even a weapon called *gajnal*, which means 'elephant-barrel'. Its exact construction is unclear, but it is known to have been used effectively in defending fortifications. According to the 17th-century British diplomat Thomas Roe, a *gajnal* was served by four

artillerymen. By the 17th century the term had been replaced by *shaturnal* ('camel-barrel'). Cannon ceased to be mounted on elephants in the late 17th century, while camel artillery lasted until the 20th century. In 1658 Dara Shukoh's army was equipped with 500 camels and 500 elephants carrying *shaturnals*, while in the third battle of Panipat (1761) Ahmad Shah Abdali's army had 2,000 shaturnals on camel-back. The length of the barrel and *shaturnals*' calibre varied greatly. It was common for two small-calibre guns to be put on an individual elephant or camel.

Apart from riders, war elephants had a ground support unit. Kautilya mentions 15 infantrymen and five horsemen serving each elephant as protection for its legs and belly. A similar support unit was allotted to every chariot, which shows that at the time of Kautilya an elephant and a chariot were considered as war machines of approximately the same class.

Elephants with riders, after a relief in Sanchi. There were usually three riders, but sometimes there were two. Sitting by the tail is more difficult, so the servant on the croup has to balance with his legs bent at a sharp angle.

WAR ELEPHANTS OF ALEXANDER'S SUCCESSORS

Historical outline

Alexander of Macedonia first encountered war elephants in 331 BC at Gaugamela, where Alexander fought Darius III (c. 380–330 BC) of Persia. However, the 15 Persian elephants were too weary to participate in the battle and were later captured by Macedonians in the Persian camp. Only in the battle of Hydaspes (326 BC) did Alexander see war elephants in action.

Darius' elephants formed the basis of Alexander's own elephant corps. He had added numerous animals captured from or donated by local Indian rulers. By the battle of Hydaspes he possessed at least 130 war elephants – about as many as the Indian king Porus. But he did not field a single elephant, as he was forced to cross the Hydaspes River (present day Jhelum River in the Punjab district) to encounter the enemy forces. Probably realizing the impossibility of getting them across the river unseen, he left the elephants in the camp. The Macedonians victory at the Hydaspes was hard won. Porus's elephants had caused considerable damage to the heavy infantry, and but for the skilled actions of his cavalry, Alexander would have lost.

From India Alexander brought hundreds of elephants both captured at Hydaspes and donated by other rulers. He surrounded his Babylonian palace with elephants and introduced an honorary post of *elephantarch* or commander of elephants. The generals of the Macedonian army (the *Diadochi*) undoubtedly considered elephants an effective weapon and, after Alexander's death in 323 BC, each sought to set up an elephant corps of his own to fight for his shares of Alexander's empire. Their sons or nephews succeeded the generals. Today scholars number five Wars of the Successors

lasting a total of 40 years, from 321 to 281 BC. The key events involving war elephants are detailed below.

In 317 BC, Paraetacene (near modern Isfahan, Iran) saw the first battle of Western armies each with an elephants corps as the two rival claimants to Alexander's empire, Eumenes and Antigonus, battled for control. A short time before, Eumenes had acquired 125 Indian elephants; Antigonus owned 65 elephants. No details about the way the elephants fought are available, and we can assume that they did not play a decisive role. In 316 BC, Antigonus and Eumenes met again at Gabiene. Eumenes positioned his elephants diagonally to countercheck flanking manoeuvres. On his left wing, where his elephants outnumbered the enemy by three to one, the animals fought each other valiantly until Eumenes' lead elephant fell dead. Its death caused his elephants to flee despite their numerical superiority. Eumenes' veteran infantry overcame those of Antigonus, but after their barrage train together with their families was lost to the enemy, Eumenes' soldiers laid down their arms and delivered up their commander-in-chief.

In 301 BC, Antigonus and his son Demetrius confronted Seleucus I (r.305–281 BC) and Lysimachus (r. 306/305–281 BC) at Ipsus. Shortly before that, in exchange for his claims on some districts in the Indus area, Seleucus had received 500 war elephants from Chandragupta. So in the battle the allies considerably outnumbered Antigonus in war elephants (400 against 75). They set 100 animals at the head of the battle formation, in front of the phalanx

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INDIAN WAR ELEPHANTS OF ANTIOCHUS III AND AFRICAN WAR ELEPHANTS OF PTOLEMY IV IN THE BATTLE AT RAPHIA, 217 BC

The battle at Raphia was the most prominent in the Fourth Syrian War, a series of conflicts between the Seleucids and Ptolemy for the possession of Syria. It is also the most well-known battle in which elephants fought on both sides. It is particularly interesting as it was a confrontation between Indian elephants and African forest ones – the only accurately described battle between the two species

Both generals placed heavy infantry in the centre and war elephants (102 Indian elephants of Antiochus against 73 African forest elephants of Ptolemy) on the wings, in front of cavalry and light infantry. It was with an elephant combat vividly described by Polybius that the battle began:

> A few only of Ptolemy's elephants ventured too close with those of the enemy, and now the men in the towers on the back of these beasts made a gallant fight of it, striking with their pikes at close quarters and wounding each other, while the elephants themselves fought still better, putting forth their whole strength and meeting forehead to forehead. The way in which these animals fight is as follows. With their tusks firmly interlocked they shove with all their might, each trying to force the other to give ground, until the one who proves strongest pushes aside the other's trunk, and then, when he has once made him turn and has him in the flank, he gores him with his tusks as a bull does with his horns. Most of Ptolemy's elephants, however, declined the combat, as is the habit of African elephants; for unable to stand the smell and the trumpeting of the Indian elephants, and terrified, I suppose, also by their great size and strength, they at once turn tail and take to flight before they get near them. This is what happened on the present occasion; and when Ptolemy's elephants were thus thrown into confusion and driven back on their own lines, Ptolemy's guard gave way under the pressure of the animals. (Polybius, V.84)

His elephants, together with a cavalry manoeuvre, gained Antiochus victory on his right-hand flank. But, carried away by chasing the enemy, he missed a crucial moment and returned only to see his centre and the other wing completely routed. The battle was lost, although the elephants had fulfilled their mission.

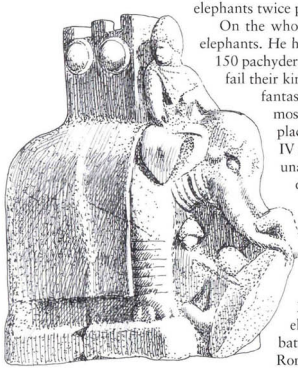
The Successors' war elephants carried towers with 2–4 warriors. Ancient authors describe them armed with long lances (*sarissa*) at Raphia. Antiochus' elephants had plumed armour shaffrons, laminar armour made from circular bands of leather or metal around the neck and legs, and possibly scale armour on the chest and belly.

infantry, and reserved 300 behind the army. So Antigonus had to protect his phalanx with all his 75 elephants. Demetrius's heavy cavalry charged the allies' left wing and put their cavalry to flight. But when he turned his detachment to take the enemy centre in the rear, he faced a wall of elephants. The wall proved impregnable. While the elephants furiously fought each other in the centre, Seleucus led a cavalry attack around the unprotected enemy flank and behind Antigonus's phalanx. Antigonus was killed and his army routed, while Demetrius fled. The battle of Ipsus was the first recorded battle won owing to elephants. Seleucus I received the title of Master of the Elephants or the 'elephant king'. Elephants became the symbol of the Seleucid Empire and coins were stamped depicting Seleucus in a chariot pulled by elephants.

War elephants were increasingly relied upon by the Seleucid military. With Seleucus fully controlling their delivery from India, other *Diadochi* had to seek them elsewhere. The Ptolemies of Egypt were lucky. When Ptolemy I (r. 305–283 BC) heard that there were plenty of elephants to the south of Egypt, in the lands of modern Sudan, Ethiopia, Eritrea and Somalia, he ordered the delivery of elephants to be organized for his army. The Kushites (Ethiopians), inhabiting the area at that time tamed elephants but are not known to have used them in combat. The Ptolemies sent one expedition after another, each comprising several hundred soldiers. Special ships combining high freight-carrying capacity with a shallow draft for river travel were built to transport the captured elephants. Ancient commentators state that Ptolemy II Philadelphus (r. 285–46 BC) already had at least 300 African elephants in his corps. Some of the drivers were Kushites, but most were recruited in India, where Ptolemy II sent special envoys.

Insurrections and coups caused considerable trouble to Seleucus's heirs in Syria and Asia Minor. In 276 BC, elephants contributed substantially to the victory of Antiochus I (r. 281–261 BC) over the Galatians. They frightened the horses of the scythed chariots into turning back and dispersing their own ranks. A similar situation was repeated in 222 BC, when Antiochus III's elephants terrified the chariot horses of Molon's rebellious troops. Thus elephants twice proved that they surpassed chariots as war machines.

A terracotta statuette of a Seleucid war elephant fighting a Gaul. A tower with merlons and a couple of shields on each side are clearly visible behind the driver. The elephant's neck and legs are probably protected with laminar armour – circular bands of leather or metal. A bell is hanging from its neck. (From necropolis of Myrina, 2nd–3rd centuries BC)



On the whole, Antiochus III (r. 223–187 BC) was fortunate with his elephants. He had a considerable elephant corps – at one stage it grew to 150 pachyderms owing to a gift from an Indian king. His elephants did not fail their king in battles and, had he not been so easily carried away by fantasies, they would have won him considerable victories. The most well-known battle with elephants fighting on each side took place at Raphia in 217 BC between Antiochus III and Ptolemy IV of Egypt. Smaller in size, Ptolemy's African forest elephants, unable to resist Antiochus' Asian elephants, yielded ground on the right-hand flank. Already close to complete victory, Antiochus made an unforgivable mistake: instead of taking the centre of the Egyptian army in the rear, he rushed in, in pursuit of the fleeing enemy. He returned from the chase only to find his army routed.

Bitter experience taught Antiochus III nothing. The situation was practically repeated in 190 BC in the battle of Magnesia against the Roman army. Antiochus set his 54 Asian elephants at certain intervals all along the forepart of the battlefield. Remembering what had happened at Raphia, the Romans did not field their 16 African elephants at all. Antiochus's

elephants fought loyally and victory was possibly at hand had he not allowed himself to be carried away by a chase that was disastrous for his army.

Following his rout at Magnesia, Antiochus was obliged to sign a humiliating peace treaty with Rome under which he was to give up all his war elephants and promise never to acquire new ones. Syrian kings did not strictly observe this point of the treaty however. Antiochus IV (r. 175–164 BC), Antiochus V (r. 163–162 BC), Alexander Balas (r. 150–145 BC), and Demetrius II (r. 145–142 BC) are known to have war elephants. War elephants were last mentioned as part of Antiochus VII's army that took the field against the Parthians in 130 BC. But by the end of the 2nd century BC, there were no elephants in the Seleucid army.

Equipment, armament and crew

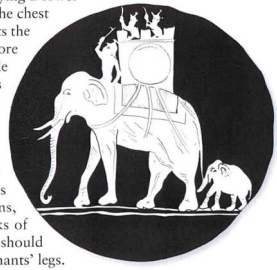
An elephant unit had a regular structure in the armies of the *Diadochi*: a corps comprised 64 elephants, while smaller units had 32, 16, 8, 4, 2 and 1 animal. Ancient authors offer only fragmentary information about the equipment of the Successors' war elephants, but taken together with the images in artefacts they allow us to form an impression of what the creatures looked like.

Plutarch (*Eumenes*, 14) describes war elephants of Antigonus I as covered with purple caparisons and carrying towers. It is the earliest mention of towers on elephants' backs in connection with Western wars. Polybius (5.84) says that at Raphia Ptolemy's elephants carried towers with warriors armed with *sarissa* (long lances). According to Livy (37.40.4), elephants of Antiochus III wore plumed armour on their foreheads and carried four men in the tower (so together with the driver, the crew numbered five men). Judging by surviving artwork, a crew usually consisted of a driver and two warriors in the tower armed with bows and lances or javelins. The artists, however, possibly did not know how to accommodate a greater number of warriors on tiny coins and figurines.

Describing the battle between rebellious Jews led by Judas Maccabeus and the Syrian army, the Book of Maccabees (III, 5:1) asserts that Syrian elephants carried 32 warriors in each solid wooden tower (not counting the driver outside it). Such a roomy tower simply could not be put on an elephant's back. Moreover, no elephant could carry such a heavy load. So it is either an exaggeration or a copyist's mistake.

The relief in the Athena Temple in Pergamum, Asia Minor, shows the equipment of a war elephant in the 2nd century BC. It is carrying a tower secured on its back with three straps passing under the belly, the chest and the tail. A helmet protected the elephant's head as well as its the driver. Armoured leggings and scale armour are more and more often used for elephants' protection. The scales in elephant scale armour, unlike man's armour, are directed upwards, as attacks against elephants came always from below.

A terracotta figure, dating from the 2nd–3rd centuries BC from Myrina, depicts a war elephant with a tower, a bell on its neck and probably some kind of armour on its neck and legs. The protection seems to consist of circular leather or metal bands. A similar laminar armour for warrior's arms was common back in the 5th century BC among the Persians, Scythians and Saka people and was well-known to the Greeks of the Hellenistic period. Little wonder that the ancient peoples should have tried to adapt the construction for the protection of elephants' legs.



This painted dish from Capena, Campania, was possibly created to depict one explanation of the defeat of Pyrrhus's army in the battle of Maleventum (later Beneventum) in 275 BC: a she-elephant frightened for her calf throws the combat formations of her own army into disarray. The story proves that it was inadvisable for female elephants to battle alongside their offspring. (Museum Villa Julia, Rome)

Towers are generally depicted as a wooden framework with rawhides stretched across. But tightly stretched hides are easily pierced by arrows and offer no protection to warriors inside. Therefore, towers were most likely either all covered with boards or made of hurdles fixed on a wooden carcass. In the latter case, the structure of a tower was similar to *pluteus*, a mobile woven siege shield popular in the ancient world. Towers were also covered with rawhides as protection against incendiaries, with the hides probably hanging loose.

WAR ELEPHANTS OF PYRRHUS OF EPIRUS

Historical outline

War elephants played an important part in the belligerent ventures of Pyrrhus, king of Epirus (a historical area in modern northwestern Greece and southern Albania) at various times during the late 4th and early 3rd centuries BC. It was Pyrrhus who introduced war elephants to the Romans and Carthaginians. In 280 BC, on the invitation of Tarentum, a Greek city in southern Italy, he transported his army, with 20 war elephants, to Italy. The Romans decided not to wait for him to get reinforcements from local tribes and attacked him at Heraclea. Although the Romans were at a disadvantage (Pyrrhus charged them while not all of the Roman force had crossed the River Siris), they fought bravely. Roman cavalry even drove back Pyrrhus's cavalry slightly. At that crucial moment, Pyrrhus fielded his elephants. The Romans had never seen these martial creatures before, and were appalled. It was not, however, the men but the horses, unaccustomed to the sight and smell of the elephants, that took to flight. This effect dispersed the Roman cavalry and exposed the infantry's flank. Pyrrhus's cavalry and elephants took the Roman army in the rear and won the day. The Romans' casualties were enormous, but Pyrrhus's losses had also been considerable. He owed his victory solely to war elephants.

Elephants gained another victory for Pyrrhus, at Asculum in 279 BC. Broken terrain prevented their participating in the battle on its first day, but on the second day Pyrrhus moved the fighting onto a plain, where his phalanx grappled with Roman legionaries. He launched an attack delivered by 19 elephants supported by light infantry. But in this instance the Romans were better prepared: they had 300 carts supplied with various hooks and burning torches. The crews in the carts aimed these weapons at the elephants' eyes and arrested the attack for some time. But then the towered warriors showered the Roman crews with javelins, while the supporting light infantry destroyed the protective woven shields and disabled the oxen pulling the carts. Panic-stricken crews fled. The elephants ultimately forced the Roman heavy infantry to retreat. Pyrrhus had won – but at what price. He is said to have remarked after the battle: 'Another victory like this and I shall ruined!' His triumph went down in history as 'Pyrrhic victory', that is a victory won at such a price that it equals a defeat.

In 275 BC at the battle of Maleventum (later Beneventum), the elephant corps failed Pyrrhus. Hardly had he pressed a Roman wing back to their camp (mostly achieved by his elephants) and victory was not far off, when something unpredictable happened. Ancient historians disagree in their description of the catastrophe, offering two alternative versions. According to one version, the Romans had set fire to pigs coated with grease and pitch, and drove them at the elephants. The screaming pigs scurried wildly between the elephants' legs. Panic stricken, the elephants took flight, dispersing their own troops, which led in turn to a rout. The other version states that the Romans were victorious simply by chance. A young elephant, still a calf, was hit hard on the head with a spear and rushed back, trumping piteously. Its mother, frightened for her offspring, rushed to it, disrupting Pyrrhus's combat lines. Meanwhile, the Romans aggravated the confusion by raining javelins on the elephants. This onslaught put the elephants into general flight and resulted in the defeat of Pyrrhus's army. Both versions are well documented in a variety of ancient sources. About that time a coin was minted in Italy showing an elephant on one side and a pig on the other. This seems to justify the first version. However, a plate dating to the same period and region, possibly made in memory of the event, shows a she-elephant carrying a tower and a calf-elephant following behind and holding his mother by the tail. A calf could not be left in the camp, as the mother would become anxious and rush to get to her offspring.

Pyrrhus's death was also connected with elephants. In 272 BC he besieged the Greek city of Argos on the Peloponnesus. At night his supporters within the city opened the gate and Pyrrhus and part of his army began to file secretly into the city. Incomprehensibly, he had brought elephants with towers with him too. The first obstacle awaited him at the gate, which proved to be too low – as in most Greek cities, it was not designed for elephants carrying towers. The superstructure had to be taken off and hoisted into place again after passing the gate. The noise woke up several citizens, who raised the alarm. The besieged prepared for defence. At dawn Pyrrhus was appalled to see all the heights occupied by the forces of Argos, while his own troops were in disarray. He ordered retreat and sent a courier to his son waiting outside the city together with the rest of the army. Pyrrhus ordered his son to break down part of the city wall and help the retreating troops out. Either the courier interpreted the order incorrectly or his son misunderstood it, but the latter rushed to the gate with the rest of the elephants and the best troops. His detachments only blocked the way for the withdrawing men. Furthermore, the biggest elephant fell down and lay across the gateway, effectively barring the passage. Another elephant, called Nikon, having lost his driver ran towards the retreating warriors, overturning everything on his way. Finding the driver's dead body, Nikon lifted it with his trunk and caught it up with his tusks. Maddened with rage he began to stampede, killing everybody within the immediate vicinity. Combat was impossible in this thick crowd for fear of injuring a fellow soldier. A young defender wounded Pyrrhus with a spear and the king engaged him in individual combat. Yet the young man's mother, watching the skirmish from the roof of a house, tore a tile off the roof and threw it down on the king's head. The tile hit him below the helmet and broke his neck vertebrae. He fell from his horse and a moment later another defender cut off his head. Thus a fatal mistake about the use of elephants led to the death of one of the greatest generals of ancient times.

OPPOSITE
Favourite elephants, like favourite horses, were sometimes awarded the highest honours. This monument of Hiran Minar was erected by Emperor Akbar (r. 1556–1605) in Fatehpur Sikri, India, in memory of his favourite elephant.

Equipment, armament and crew

As is known from Dio's description of the battle at Heraclea, Pyrrhus's elephants carried towers. Pyrrhus, however, was not the first to put towers on elephants. Antigonus I already used towers, as we have seen. Unfortunately, the sources offer us no more information concerning elephants' equipment and armament. It can only be supposed that Pyrrhus's war elephants looked like the war elephants of Alexander's Successors.

CARTHAGINIAN WAR ELEPHANTS

Historical outline

Carthaginians first became acquainted with war elephants fighting against Pyrrhus of Epirus on Sicily between 278 and 276 BC. Having experienced the effect of this new weapon, Carthage quickly realized that she, too, could acquire it, as African forest elephants inhabited North Africa in great numbers. It was much easier to hire professionals to catch this variety of elephants rather than importing elephants from India. Soon Carthage had the most powerful elephant corps in the Mediterranean world, with stables housing up to 300 elephants located in the capital. At first drivers were Indians hired through Egypt, but later drivers were also recruited from other regions including Syria, Numidia and some other African states. Elephants now replaced chariots as the Carthaginians' main striking power.

During the First Punic War (264–241 BC), the Carthaginians were only beginning to master this new arm of warfare and paid a high price for their lack of experience on the battlefield. In 262 BC, when the Romans besieged the Carthaginian city of Agrigentum on Sicily, Carthage dispatched to Agrigentum

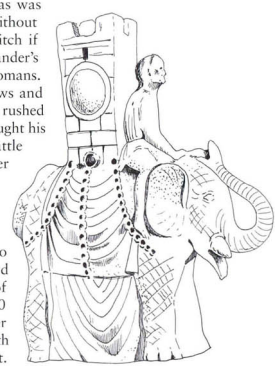
This rather fanciful depiction of Hannibal and his elephants fighting a Roman Legion in the Alps, by the School of Raphael (c.1534–1549), is largely anachronistic, with more Renaissance flourish than historical fact, but it does effectively demonstrate the awe and regard still held for Hannibal's war elephants centuries later. (Corbis)

an expeditionary corps of 50,000 infantrymen, 6,000 horsemen and 60 war elephants. The Carthaginian general stationed his elephants behind the first infantry line. When the Romans destroyed this vanguard, the fleeing soldiers frightened the elephants into running away. The integrity of the combat formations was completely broken and victory cost the Romans little effort.

In spite of this bitter experience, the Carthaginians did not give up on the use of elephants. When Marcus Regulus, a Roman general and consul, landed in Africa in 256 BC, a large army was sent to prevent the Romans' advance on Carthage, but the elephants' contribution to the battle of Adys was slight. The Carthaginians realized that the commander of the elephant corps should be replaced and hired a Greek named Xanthippus. Xanthippus had participated in the defence of Sparta from Pyrrhus of Epirus in 272 BC and met with war elephants there. In the battle against Regulus on the Bagradas River in 255 BC, Xanthippus put nearly 100 Carthaginian elephants in file in front of the infantry lines, as was common. Although the legionaries 'fell in heaps', according to Polybius, they bravely fought elephants in the centre. On the wings, however, a larger Carthaginian cavalry force put Roman horsemen to flight. The Romans were effectively encircled and a Carthaginian victory was assured. Only a small part of the Roman army forced its way back, but 'the greater number were trampled to death by the vast weight of the elephants, while the remainder were shot down by the numerous cavalry in their ranks as they stood' (Polybius, I.34).

This experience, and the tales of the Roman legionaries who survived, ensured that Rome did not dare to confront elephants for several years. Conversely, the Carthaginians began patently to overestimate war elephants' abilities and soon paid a high price for it. Caecilius Metellus, Roman commander on Sicily in 251 BC, resorted to a ruse to counter the war elephant threat. He hid a considerable army in the well-fortified city of Panormus and ordered a deep ditch dug out in front of the walls. Then Metellus sent a detachment of light-armed warriors to harass the Carthaginian troops incessantly. This provocation finally forced the Carthaginian general to draw his army up in a combat formation with elephants in front, as was expected. The detachment continued to worry the elephants, without really clashing with them, ready to hide themselves in the ditch if attacked. Hopeful of gaining an easy victory before their commander's eyes, elephant drivers were thus provoked into assailing the Romans. But the elephants failed to cross the ditch, and a hail of arrows and javelins poured onto them from the fortress walls. Injured, they rushed back, scattering their own troops. At that moment Metellus brought his main forces out of the city and completed the rout. This battle restored the Romans' self-confidence and they were no longer afraid of facing war elephants.

Hardly was the First Punic War over when Carthage found itself drawn into another conflict, known as the Mercenary or Truceless War (241–237 BC). The bulk of the Carthaginian army consisted of mercenaries. When the government failed to pay them the promised salary, they rebelled and even besieged Carthage. Salvation came with Hamilcar Barca and his force of war elephants. In the final battle, Hamilcar, with only 10,000 men and 70 elephants against 25,000 mercenaries, lured the latter in the centre with a sham retreat and suddenly attacked them with his cavalry and elephants. The rebels suffered a complete defeat.



A terracotta figure of a war elephant with a tower. It is hard to assert with confidence whether it is an African or an Asian elephant. Judging by the ratio between the figures of the man and the animal, it is African. In this case, the figure proves that African forest elephants did carry towers. (National Archaeological Museum, Naples)

In 218 BC, the Second Punic War began and the famous Carthaginian general Hannibal traversed the Alps to invade Italy with an army that included 37 war elephants, mostly African. In the course of that arduous crossing, he lost a considerable number of infantrymen, cavalry and draught animals, but not a single elephant, if the ancient sources are correct. The war elephants' contribution to Hannibal's first victory in Italy, on the Trebbia River, was great indeed. They frightened the Roman cavalry and routed Roman auxiliaries. Shortly after the battle, however, all but one elephant died. We do not know why, but the after-effects of exhaustion suffered during the crossing or wounds or some disease incurred during the campaign are all distinct possibilities.

Eighty elephants fought for the Carthaginians in the battle of Zama in 202 BC. Recently caught and poorly trained, they played no decisive role, partly owing to the Romans' stratagem: they let the elephants through passages purposely left in their formations. Defeated in the Second Punic War, which ended in 202 BC, Carthage was forbidden to keep war elephants. In 149 BC the Romans found a pretext to launch the Third Punic War, which put an end to Carthage in 146 BC. The war had begun unexpectedly and the Carthaginians had no time to equip themselves with war elephants.

Equipment, armament and crew

It is still debatable whether the Carthaginians supplied their war elephants with towers. Most scholars doubt it, as forest species, being smaller than Asian, could not generally carry additional weight. However, the Egyptian Ptolemies as well as Numidian kings are recorded as having put towers on forest elephants, and the Roman poet Juvenal mentions towers on Hannibal's

CARTHAGINIAN WAR ELEPHANTS AT THE BATTLE OF ZAMA, 202 BC

This crucial battle of the Second Punic War saw the Carthaginians under Hannibal encounter the Roman army of Scipio, who was afterwards titled 'Africanus'. The armies were approximately equally matched (Hannibal's army numbered about 35,000 infantrymen and 4,000–5,000 horsemen and Scipio's about 30,000 infantrymen and 6,500 horsemen), but Hannibal also had a force of 80 war elephants. The Carthaginian army, however, had been brought to strength in a hurry, re-manned with a considerable number of recruits and the recently caught elephants were not properly trained.

Both generals concentrated their infantry in the centre, with cavalry on the wings. Scipio saw Hannibal station the 80 war elephants in front of his infantry and resorted to a ruse: he arranged his legionaries in the standard three lines but instead of the draughtboard formation he placed the maniples in rows with gaps between them. Infantrymen were preceded by lightly armed *velites* who screened the 'elephant lanes' and were to receive the first blow of Hannibal's elephants.

When Hannibal ordered an elephant attack, the Romans blew their trumpets and horns and made an unbearable noise. Some frightened elephants pivoted and rushed onto Hannibal's Numidian cavalry. Scipio's own Numidian cavalry took the opportunity and completed the rout of Hannibal's left wing. The rest of the elephants clashed with the *velites*, who fought stubbornly, suffering heavy losses. The elephants, too, were hard put to it and rushed into the gaps in the Roman rows, as they opened up, passing harmlessly through the army formations along the passages formed by the soldiers, before being captured.

The plate depicts this stage of the battle. The elephants, which had already suffered considerably at the hands of the *velites*, have glimpsed a road to safety and are running into the 'elephant lanes'. Their equipment comprises towers, blood-red caparisons and harnesses. Many scholars question whether there were towers on Carthaginian elephants, but written sources, as well as images, point to their presence.

Owing to the ruse, the elephants did not seriously harm the Romans, whose cavalry won the battle: having gained victory on the flanks, it attacked Carthaginian infantry at the rear, and Hannibal's army was destroyed.

elephants. Lucretius is even more precise: 'In process of time the Carthaginians taught fierce elephants, with towers on their backs, and with snake-like proboscis, to endure the wounds of war, and to throw vast martial battalions into confusion.'[2] Moreover, the Carthaginians became acquainted with war elephants through Pyrrhus of Epirus, who undoubtedly placed towers on elephants' backs. Therefore, there is a strong argument for the Carthaginian use of towers.

Concerning the rest of elephants' equipment, there is very little historical record. The Roman playwright Plautus describes Hannibal's elephant Surus wearing a red cloth. According to Appian, at Zama Hannibal's elephants were equipped to inspire the enemy with horror. This could mean that they possibly wore red-blood caparisons or armour.

WAR ELEPHANTS IN THE ROMAN ARMY

Historical outline

It is often assumed that the Romans realized the danger of using war elephants as early as their wars with Pyrrhus of Epirus and never employed them in their army. But this is not the case. The Romans first met with war elephants at Heraclea in 280 BC; much of their defeat was on account of Pyrrhus's elephants. Yet after the battle they scornfully called them 'Lucanian cows' (after the district of Lucania where they had first faced elephants). The next year, at Asculum, the Romans brought out carts with hooks and torches against Pyrrhus's elephants, but the idea failed to work, and again they were defeated because of elephants. In 255 BC the Carthaginians dealt them such a crippling blow, also with the help of elephants, that the Romans chose not to engage the Carthaginians and stay within fortress walls for another several years. It may seem strange that several years later, having seized 140 Carthaginian elephants in the battle of Panormus, they killed all of them in the circus to amuse the public instead of using them for war. Most of the elephants had been captured without drivers, however, and were in fact useless to a Roman army unskilled in how to use an elephant corps effectively.

Victory in the Second Punic War brought the Romans several elephants, which they first used in battle against King Philip V (r. 221–179 BC) of Macedonia in 199 BC. What was more important, however, was that in the course of that war the Romans acquired loyal allies in Numidian kings, who provided them with elephants for every major campaign from 198 BC throughout the 2nd century BC, supplying 10–22 elephants at a time. The Romans used elephants in their wars against Macedonia, Antiochus III, Celtiberians in Hispania, the Carthaginians in the Third Punic War, and the Gauls. Elephants were active in nearly all the battles and performed consistently well. For example, the role of elephants in the battles of Cynoscephalae (197 BC) and Pydna (168 BC) between the Romans and the Macedonian kingdom has been underestimated. The honour of achieving victory is usually ascribed to the superiority of mobile Roman legions over an inert Macedonian phalanx. Yet it is forgotten that none other than elephants gained the Romans victory on the flanks in both battles – without them final victory could not have been achieved. The battle of Magnesia in 190 BC was the only encounter during this period where the Romans did not dare to commit their elephants to action, leaving all the 16 animals in reserve. It

2 Lucretius, *Lucretius on the Nature of Things* (London, 1872) p.239

was a reasonable decision: Roman elephants were African, while Antioch III had Asian species, considerably outnumbering the Romans' with 54 versus 16 pachyderms. The Romans were perfectly aware of the fact that 'the African elephants are no match for the Indian elephants even when the numbers are equal, for the latter are much larger and fight with more determination' (Livy, 37.39.13). They remembered what had happened in the battle of Raphia in 217 BC and decided to take no risk.

Bronze currency bar (*aes signatum*), Rome, about 275 BC. These marked pieces of bronze were still used in Rome alongside regular coins already existing at that time. The image of an elephant appeared on them only after 280 BC, when in the battle at Heraclea the Romans first encountered the elephants of Pyrrhus of Epirus. (British Museum, London)

Only in the late 2nd century BC, when their relations with Numidia had deteriorated to open warfare, were the Romans deprived of a dependable source of war elephants. They do not seem to have used them in the first half of the 1st century BC. Nevertheless, elephants probably participated in Caesar's invasion of Britain. Caesar does not acknowledge the fact, rendering all the homage to his legionaries, but Polyaenus (VIII.23.5), a Greek living in Rome in the 2nd century AD, tells us that in crossing the Thames River, Caesar scattered the barbarians, awaiting him on the other bank, with a single huge elephant carrying a tower with archers and slingers. The sight of a strange animal apparently sent the barbarians fleeing. Caesar is also known to have been planning to use elephants in his unrealized campaign against the Parthians, the bulk of whose army was cavalry.

Pompey the Great, Caesar's opponent in the civil wars, had no aversion to using war elephants, either. He had them in his army at Pharsalia, in Greece, although history has not recorded their particular role in this battle. Pompey's adherents in Africa also had a considerable number of elephants at their disposal, delivered by the allied Numidian king Juba. Before facing them in battle, Caesar acquired several elephants from Italy in order to train his soldiers to fight them. Even though these were probably circus elephants not trained for warfare, he taught five cohorts to oppose elephants, including how to hit vulnerable and unarmoured spots in their bodies.

Caesar was rewarded for his efforts. In the subsequent battle of Thapsus (46 BC), Caesar's cohorts showered the enemy's elephants with accurate fire from their bows and slings and put them to flight. It should be noticed that the fire was not lethal, as all the elephants were captured alive, in armour and carrying towers, and were later used to terrify a rebellious town. Seemingly, Juba had delivered untrained animals, which were easily routed.

The battle of Thapsus was the last in the Mediterranean area to be fought with a considerable number of elephants. Emperor Claudius (r. AD 41–54) brought several elephants to Britain in AD 44 to suppress an insurrection. He may have repeated Caesar's exploit on the River Thames, but nothing is known about it. The last man to try to introduce elephants on the battleground was Didius Julianus (r. 193), who had fought for the title of emperor with Septimius Severus (r. 193–211) in AD 193. Julianus lacked an effective army and sought to strengthen it with elephants from a circus. Not trained for the battlefield, the elephants naturally refused to fight, and only succeeded in adding to the confusion of battle.

An analysis of peace treaties once more proves that the Romans were concerned about the possible threat posed by war elephants. Almost every treaty signed with a defeated foe who had used war elephants contained a clause forbidding them to have this arm of service in future: victorious in the Second Punic War, the Romans demanded that all war elephants be given to them and acquisition of new ones was banned. When the Second Macedonian War was over, Philip V was prohibited to have a single elephant; after Antioch III was defeated at Magnesia, he was ordered to give away all his war elephants and to keep none in the future.

Equipment, armament and crew

Numerous sources testify that Roman elephants carried towers and wore armour. It was probably a Numidian tradition, as the Romans were unlikely to have re-equipped elephants received from their allies. Tower-warriors were generally archers and slingers. Caesar's elephant that frightened the barbarians on the Thames is recorded as having worn armour made from iron scales. Unfortunately, no other details of Roman elephant equipment are known to us.

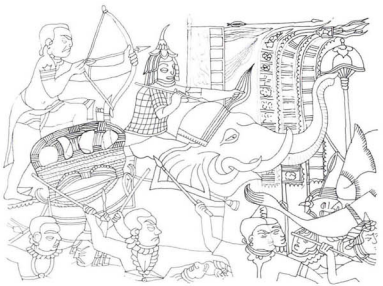
WAR ELEPHANTS IN SOUTHEAST ASIA

Historical outline

Khmerian war elephant in action. The crew consists of two men – or maybe the driver was deemed too insignificant to be depicted. It is hard to tell which of the two riders is of higher rank: the one with a javelin and shield on the elephant's neck or the archer in the *howdah*. In Southeast Asia noble warriors traditionally fought sitting in front, and his rich armour and helmet also probably speak in favour of the first warrior. (Relief carvings, Angkor Thom, Cambodia, late 12th–early 13th centuries, after D. Nicolle)

War elephants were the main striking force of native armies in the countries of mainland Southeast Asia from the first centuries AD to the late 19th century. White elephants were most highly valued and their transfer to another person served as a sign of vassalage. A request for a couple of white elephants equalled a demand to acknowledge suzerainty. More than once a refusal to give them out served as a signal to start war.

A single combat on elephant-back was also very popular amongst the nobility of Southeast Asia. In contrast to a duel on horseback, elephants took an active part in this combat, which made the outcome twice as unpredictable. Single combats could take place during a battle or replace the battle itself. Indeed, the result of a battle or struggle for power was sometimes decided in a duel of kings fighting on war elephants. In 1424 two elder brothers of King Intharaja of Siam (r. 1409–24) chose to decide who was to succeed to the throne by fighting each other on elephants. Both were killed in the combat, and the throne was inherited by a younger brother, who became king Boromaraja II (r. 1424–48). Siamese women, too, participated in duels on war elephants. In Ayutthaya, capital of a Siamese state of the same name, there was a corps of amazons, and at a dramatic moment of the siege of the capital in 1549, the ruler's wife Pra Suriyothai rode her war elephant onto the battlefield side by side with her husband. She fought bravely and after her death in the battle became a national heroine.



In the 18th century the use of war elephants in warfare gradually declined, but they were still an integral part of Southeast Asian armies

throughout the 19th century. Although their role was increasingly reduced to hauling heavy artillery pieces, they continued to perform their duty as mobile artillery platforms for light cannon, or battering rams for breaking into fortifications. Duels among the nobility became a thing of the past.

Elephants underwent regular inspections and mock battles. In Vietnam, mock battles took place four times a year until 1825 and later as often as twice a month for some years. Elephants were also regularly trained to assault palisades and dummies made of straw to the accompaniment of musket shots and artillery fire.

Equipment, armament and crew

Fighting tower and *howdah* were the most striking elements of a Southeast Asian elephant's equipment. *Howdahs* were used throughout history and met with more frequently than fighting towers. They were wooden or woven from reeds. Noblemen had more exquisite, sometimes gilt *howdahs*, resembling thrones, while common warriors were content with simpler affairs, rectangular or round like a basket. In action, a *howdah* could be protected with shields placed on the sides. Fighting towers were relatively small, having room for just one or two warriors (with a bow or musket). They could have three sides only (without the back). Occasionally there was neither *howdah* nor tower, and the crew simply sat astride the elephant.

Single combat also made an impact on the position of the crew in Southeast Asian countries. Although travelling inside a *howdah*, the noble warrior generally moved onto the elephant's neck in battle, while the attendant took his seat in the *howdah*. This retainer took no immediate part

Statue to honour the victory of the Siamese over the Burmese in the battle of Yuthahathi, 1584. Not only warriors on elephant-back but elephants themselves are fighting – the one on the right has passed slightly around his adversary and attacked with its tusks. (Muang Boran or Ancient City, Bangkok, Thailand)

A war elephant with a traditional Southeast Asian crew arrangement: a hero-warrior in front followed by an attendant in a *howdah* and the driver behind. (Detail from a mural painting with a 'Ramakien' motif – Thai version of the Indian *Ramayana* – from the temple complex of the Emerald Buddha, Bangkok, late 18th century.)

in the battle, but performed two key functions. The first was to pass to the fighting warrior a likely weapon from an impressive arsenal, including several types of long-shaft weapons (spears, halberds, tridents and so on) housed behind the *howdah*. His main function, however, was to direct the elephant's movements. With a brush in each hand he showed where to turn, giving orders to charge or halt. The driver, sitting behind the howdah, followed his directions. He sat quite near the elephant's tail, with his legs stuck under the ropes with which the *howdah* was fixed on the animal's croup. Unable to guide the elephant with his legs or *ankusha*, the driver slapped the elephant's croup or rear legs with a long or short stick.

With a less noble crew, a professional warrior holding a long-shaft weapon rode on the elephant's neck while two archers or crossbowmen sat in the *howdah* (in later times they were frequently armed with a small-calibre cannon) and a driver was positioned behind the *howdah* as usual. The warrior on the elephant's neck could manage without a driver, simply controlling the animal with his legs, but this was rare. Probably both the men on the neck and by the tail could drive an elephant and replace one another if need be.

Apart from a crew, every war elephant had a ground support unit of one to four men attached to positions around each leg. These infantrymen were to defend the elephant's legs and belly against an attack of infantrymen. If a woman led an elephant to battle, the whole team including the crew and ground support unit consisted of female warriors.

Khmer troops in Cambodia placed double-bow crossbows on elephants. Several surviving images of the late 12th through to early 13th centuries show that it was not an experimental device. The idea of multiple crossbows was undoubtedly borrowed from China, where similar powerful installations comprising two to three bows were common at the siege and defence of fortresses. Nevertheless, only the Khmers put these crossbows on elephants' backs.

Armour on elephants, as well as on men, was not common in Southeast Asian countries, and there is some interesting surviving evidence. In 1388 a Burmese army invaded southwestern China with 100 war elephants. The elephants were wearing unusual armour: numerous bamboo tubes with short spears hanging on all sides. The Burmese probably hoped that the structure would not only protect an elephant, but would also prevent enemy warriors climbing onto it. The Chinese, however, made the elephants flee by simply firing at them with crossbows.

The passage through later centuries saw little change in elephant equipment. An eye-witness describes 19th-century Cambodian war elephants in detail:

> ...a cuirass of thin iron sheet, and ... an open *howdah*, allowing ease of movement in battle. The howdah is provided with 100 javelins... Each

elephant is ridden by three warriors wearing a visored iron helmet. The first of them, armed with a sabre and a short-handled goad, is seated on the beast's neck; the second sits in the *howdah*, provided with various weapons; and the third, who rides pillion [behind the *howdah*], is loaded with javelins.[3]

The iron cuirass was probably intended to defend an elephant from bullets.

WAR ELEPHANTS ELSEWHERE

Elephants were once widespread in China. As early as the 1st millennium BC, the traveller Yu-Kung called the region of southern Ho-nan 'Country of Docile Elephants'. Elephants took part in battles between the Wu and Chu states in the late 6th century BC. In 506 BC, a Wu army surrounded a Chu city. The Chu tied lighted torches to elephants' tails and drove them, panic stricken, at the besiegers. The assault caused certain confusion, but not the besiegers' retreat. The elephants were simply draught animals, not trained for war. However, elephants soon became a rarity in China and they never played a substantial role in Chinese warfare. Yet, in the 10th century AD there was an elephant corps in South China, in the southern Han state (917–71). The corps fought successfully against the Chu state in 948, but suffered a complete defeat at the hands of crossbowmen of the Song dynasty. Chinese war elephants are heard of again in the 16th–17th centuries. In 1598 a Chinese emperor showed his guests at least 60 elephants; moreover, each was carrying a tower housing eight men. The elephants were probably delivered to China from Southeast Asian countries and we know that Siam is said to have delivered elephants to China as a tribute in the late 17th century.

Zoroastrian scriptures of Achaemenid Persians called the elephants 'creatures of Ahriman' or demons. Nevertheless, Darius tried to use them in the battle of Gaugamela (331 BC), where they had been provided by an Indian detachment from the Indus River. The attempt failed: the elephants refused to keep a round-the-clock vigil awaiting battle and had to be returned to the camp, where they were captured by the Macedonians.

The Parthians also resorted to war elephants, though on a smaller scale, and the exact point in time is not known. The Parthians are only known to have made an attempt at using elephants against the Roman Emperor Trajan (r. 98–117) when he invaded Parthia in the early 2nd century AD.

Three Khmer relief carvings, late 12th through to early 13th centuries, showing double-bow crossbows on elephants' backs. The idea of a multiple crossbow was undoubtedly borrowed from China, but only Khmers put this device on elephants' backs. (Bayan, Bantây Chmàr, Cambodia, after D. Nicolle)

3 I. Heath, *Armies of the Nineteenth Century: Asia. Burma and Indo-China* (Nottingham, 2003) p.118

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BATTLE BETWEEN THAI AND BURMESE ARMIES AT THE WALLS OF AYUTTHAYA, 1549 (OVERLEAF)

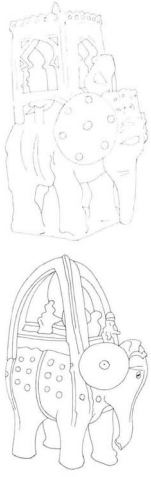
In 1549 the army of the Burmese Toungoo kingdom besieged Ayutthaya, capital of a Siamese state of the same name. A decisive battle raged there, with elephants being a central fighting weapon. The Siamese ruler was supported in battle by his wife, Pra Suriyothai. Disguised as a man, the queen fell dead fighting on an elephant in a single combat. She is a national heroine of Thailand, immortalized in books and a movie called *The Legend of Suriyothai*.

Since the first centuries AD and up to the 19th century, war elephants were the main shock force in Southeast Asian armies. In action, noble warriors traditionally sat on the elephant's neck, not in the *howdah* where they normally rode. The place in the *howdah* was taken by an attendant, who directed the elephant's movements with a brush gripped in each hand. Following his indications, the driver operated the elephant sitting on its croup, behind the *howdah*. The attendant also handed the necessary weapons to the warrior as they were required. For a single combat, noblemen generally used long-shafted weapons (including spears, halberds, tridents), a considerable stock of which were stored in the *howdah*.

With the arrival of firearms, specialized elephant corps were formed, armed with small swivel guns, called *jingalls*, mounted in the *howdah* and usually attended to by two soldiers. Thus, the total strength of the crew was four men (counting the professional warrior in front and the driver behind). Such units of the Burmese army participated in the siege of Ayutthaya, which we can see in the artwork.

Table 2. Periods of the use of war elephants in various countries.

	Began to be used	End of use
India	Mid 1st millennium BC	Late 18th century AD (used as draught animals later)
Southeast Asia	First centuries AD	Late 19th century (used as draught animals later)
Diadochi (Alexander's successors)	323 BC	130 BC
Carthage	270–60s BC	202 BC
Rome	199 BC	46 BC (last fought in a battle) AD 193 (unsuccessful attempt to use in battle)



Two glazed ceramic figurines from Iran, 12th–13th centuries. A peculiar feature of both figurines is the large shields covering the beasts' vulnerable ears (with the driver sitting behind). Judging by these, as well as some other details of the elephants' equipment, they are war elephants. However, the structures on their backs only distantly resemble fighting towers. It is most likely, therefore, that such elephants carried kings in battle. (Iran Bastan Museum, Tehran and Freer Gallery, Washington, after D. Nicolle)

Sassanid Persians used war elephants more often. In AD 227, King Ardashir I received a great number of elephants from India and was able to field 700 war elephants in the subsequent war with Rome. Elephants frequently served other Sassanid kings, too. Various sources agree that Sassanid elephants carried towers packed with archers.

The Sassanids introduced war elephants to Arab armies. In AD 634, Yazdegird III (r. 632–51) moved a single elephant out against an Arabian army. The elephant was killed, but the Arabs were frightened enough into finishing the battle with a draw. Six months later the Persians fielded 30 elephants, with a white elephant at the head. The Arabian cavalry fled and the army was routed. Two years later, in AD 636, in the three-day battle of Cadesia, the Arabs already felt more at ease. On the first day their cavalry, unaccustomed to elephants, refused to attack. The infantry, however, was resourceful: the soldiers stole up to the elephants and cut the belts securing the towers, which then fell down. The Persians spent the next day repairing their armament, so the elephants could not fight. Meanwhile, the Arabs thought of a second, ingenious strategy. They dressed some of their camels in fantastic housings and covered their heads with flowing vestments. The sight was so fearful that Persian horses took to flight. By the third day, the Persians had repaired the armament and brought in their elephants. The defeat of the previous day, however, had caused Persian deserters to betray the elephants' weak spots to the Arabs, who began to aim their arrows at the elephants' eyes. The elephants fled in panic and the Arabs won the day. The Arabs themselves never resorted to using war elephants.

According to a 6th-century historian, there were no less than 2,000 war elephants in the army of White Huns or Ephthalites, semi-nomadic tribes of Central Asia, living north of India. The Ephthalites may have sourced the elephants from India, as they began raiding the country in the 5th century.

Indian experience of war elephants was adopted by her neighbours. The Buyids, ruling in Iran and Iraq in the late 10th and early 11th centuries, used elephants in combat to some extent. War elephants also played an important part in the armies of the Ghaznavids, the Afghan dynasty of the 10th–12th centuries whose rulers repeatedly raided northern India. They either captured elephants during their raids or received them as tribute from Hindu *rajas*. Like the inhabitants of other regions, the Ghaznavids preferred Indian *mahouts* to drive elephants in battle. In 1023 Sultan Mahmud had 1,300 elephants; at the time of his death in 1030 his elephant corps numbered 1,670 pachyderms. Mahmud's soldiers fought opposing elephants with flaming arrows and naphtha grenades. Crews on elephants' backs were also armed with naphtha grenades. History records that Mahmud's elephants were both hardy and brutal. They had no fear of the explosions of naphtha grenades and were capable of attacking through deep snow, which is unusual for elephants.

They certainly took no mercy of the warriors of Ilak Khan, king of Cashgar, in the winter of 1007–08: 'The execution wrought in their ranks by the Sultan's elephants completed their demoralisation. One of the elephants, lifting Ilak Khan's standard-bearer in his trunk, hurled him into the air and then catching him on his steel-clad tusks, cut the wretch in two, while others threw down riders from their horses and trampled them to death.'[4]

On devastating North India in 1398–99, Timur took elephants back with him. War elephants equipped with armour, tusk swords and flame-throwers on their backs participated in his subsequent campaigns as far as Turkey.

Hathi Pol or Elephant Gate in the citadel of Fatehpur Sikri, India. Sculptures of elephants were placed on pedestals on either side of the gateway. Now dilapidated, the elephants used to touch trunks over the arch of the gate.

WAR ELEPHANTS IN ACTION

The functions, merits and demerits of war elephants

War elephants performed five main functions:

Scaring the enemy – Unaccustomed to fighting elephants, some units could take flight at the very sight of war elephants. Even brave and highly experienced Roman legionaries took several long years to dare face them again after the massacre wreaked by Carthaginian war elephants in 255 BC. Horses are also afraid of elephants' appearance and smell, and in several instances untrained cavalry fled when facing war elephants.

Disturbing the enemy's battle formation – Causing disarray in the close order of a phalanx would be conducive to its subsequent rout.

Inflicting heavy casualties – The enemy undoubtedly suffered great losses from war elephants. Numerous references to soldiers who 'fell in heaps' fighting war elephants can be found in ancient authors' accounts.

Carrying the army commander – Riding an elephant, the commander towered above his army and could observe the battlefield and encourage the troops who fought alongside him. However, the figure towering on an elephant's back was a prime target for enemy soldiers, who competed with each other in their attempts to kill or capture him. Deprived of its commander, the army almost inevitably fled. Even if the commander was alive, if his panic stricken elephant took flight the outcome was the same.

Destroying enemy fortifications – Elephants mostly performed this function in India, where they were trained to do it. According to Megasthenes, an Indian elephant could pull down merlons with his trunk. Kautilya names breaking fortress walls, gates and towers among the elephants' main functions. Indeed, throughout Indian history elephants have performed such functions repeatedly and successfully. They were frequently used as living battering rams against a gate. Nearly all castle gates in India were covered with long and sharp anti-elephant spikes, either all over the surface or at the level of the animal's forehead, the forehead being its natural breaching weapon (hence it was usually protected with a metal plate).

Besides these main functions, there were some others. In Asia, elephants were used for transmitting signals during a battle. Easily visible on the tall back of an elephant, signal flags called the soldiers' attention to a new order,

4 M. Nazim, *The Life and Times of Sultan Mahmud of Ghazna* (New Delhi, 1971) p.51

which was also given with a pair of large drums placed on signal elephants. Army elephants cleared roads for an advancing army or did the same at sites used for camps. They were even used to put out fires in the camp by blowing water out from their trunks. Draught elephants carried ammunition or hauled cannon. Elephants were used in crossing rivers. When Perdiccas, the regent who ruled in the name of Alexander the Great's young children, invaded Egypt and needed to cross the Nile in 321 BC, he filed his elephants, trunk to tail, from one bank to the other to act as a breakwater. Horses were placed in the same way some distance down the stream. People began to cross safely between the two lines. All of the activity, however, stirred up the sand from the bottom and the river became deeper. In addition, crocodiles soon began to appear. The animal lines became disordered, and the current grew increasingly stronger and people were washed away or fell victim to the crocodiles. A total of approximately 2,000 people were lost in the crossing. Indian commanders used a similar method more successfully. They drew up elephants in two lines and tied them with ropes. People and horses then successfully crossed the river between the elephant lines.

Its liability to frenzy was an elephant's worst feature. An animal tended to become furious from fright or numerous injuries. The death or injury of a driver also made an elephant uncontrollable. An unruly elephant was capable of causing much trouble for the troops; many battles were lost because panic stricken elephants fled through the rows of friendly soldiers.

Deployment of elephants on a battlefield

War elephants were normally stationed in front of the other arms. One of the two kinds of formation was generally used: 1) Elephants, with friendly infantry

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WAR ELEPHANTS OF SOUTHEAST ASIA, 19TH CENTURY

War elephants survived in Southeast Asian countries longer than anywhere else. During the entire 19th century they were to some extent used in the armies of Burma, Cambodia, Siam, Vietnam, the Shan States, the Lao States and Malaya. Even Europeans highly appreciated elephants' war characteristics. For example, in 1812 de la Bissachère wrote about Vietnamese war elephants:

> More often it is the elephants which decide the victory. These animals throw themselves impetuously at a battalion and break it; with just one blow of their trunk they remove a whole file of soldiers. Far from intimidating them, blows on these animals infuriate them. Edged weapons do not pierce their hides, and musket-balls do not kill them unless they hit right in the middle of the forehead, just a little above the eyes. Those of these animals which fight with great courage obtain privileges, titles, dignities, and decorations, which consist principally of having their tusks gilded.
>
> – I. Heath, *Armies of the Nineteenth Century: Asia. Burma and Indo-China* (Nottingham, 2003) p. 182

As late as 1885, when the Vietnamese drove their war elephants into the creatures' last combat, French soldiers were greatly impressed. The elephants continued to attack in spite of a salvo of fire. Frightened soldiers sought shelter behind an embankment and only with difficulty forced the Vietnamese to retreat.

The two Burmese elephants in this plate were reconstructed from the images dating from the 19th century. Equipment depended on the animal's function. The first elephant serves as an artillery platform for small guns (*jingalls*). Eyewitnesses of the grand review at Mandalay in 1879 report elephants carrying basket-like *howdahs* with two 45–60cm (17.7–23.6in) long jingalls fitted to each side. The 25–50mm (1–2in) calibre *jingalls* tapered off into a tail, by which they could be aimed and held while shooting. The crew consisted of a driver on the elephant's neck and one or two soldiers in the *howdah*. The second elephant is carrying a tower housing one or two men armed with bows and arrows or muskets. An officer, recognizable by a helmet and a typical necklace, is sitting on the elephant's neck while the driver, hurling javelins in battle, is on the croup. Four men, one at each leg, guard the beast's legs and belly against enemy infantrymen.

G

ABOVE
Anti-elephant spikes on the gate of Lohagarh, Bharatpur, India. Elephants were used as live battering rams in India. An infuriated elephant, his forehead protected with a steel plate, was directed at the gate. The defenders responded by sticking spikes on the gate, either over their entire surface or only on the level of the elephant's forehead. The spikes were 7.5–33cm (3–13in) long.

BELOW
Anti-elephant spikes with hooks on the gate of Kumbhalgarh, India. This kind were rarer than ordinary spikes. The hooks prevented the elephant from breaking loose of the spikes and made the unfortunate creature an excellent target for the besieged.

behind them, in the centre confronting enemy heavy infantry phalanxes; 2) Elephants, usually supported by cavalry, on the flanks. Less frequently they were kept in reserve to be used in attack at a crucial moment. Seleucus I did so in the battle of Ipsus, and Pyrrhus at the battles of Heraclea and Asculum.

Whatever the formation, elephants were put at about 15–30m (16–33 yards) from each other with light infantry detachments – slingers, archers and javelin throwers – between them. These soldiers were tasked both to inflict casualties upon the enemy in combined action with elephants and defend the animals' legs and bellies from attacks by enemy infantry. According to Diodorus, 50 infantrymen per elephant was a standard for Mediterranean armies. Heavy infantry and cavalry always came behind the elephants, while war chariots (if there were any) were positioned in front of the formation, either as a separate unit or alternately with elephants. Shortly before the battle, war elephants were treated to wine to increase their violence and ferocity.

Elephants were most effective when directed against weak infantry or cavalry whose horses were unaccustomed to the sight and smell of elephants. Strong infantry, like Macedonian hoplites or Roman legionaries, was quite capable of withstanding an elephant attack. Ancient historians offer a vivid description of Indian elephants fighting with Macedonian hoplites: 'The action was unlike any of the previous contests; for wherever the beasts could wheel round, they rushed forth against the ranks of infantry and demolished the phalanx of the Macedonians, dense as it was' (Arrian, *Anabasis*, 5.17.3); 'The animals inspired everybody with fear, they made a strange noise that frightened not only timorous horses but also people and disarrayed the rows of troops... It was especially terrifying to see the elephants seizing armed men with their trunks and passing them overhead to their drivers' (Quintus Curtius Rufus, 8.14.23–27); 'Elephants joined the fighting, properly using both the huge mass of their body and their strength: some perished underfoot trampled down together with their armour; others were encompassed with their trunks and flung down against the ground: people died a terrible death; many breathed their last pierced through with elephant tusks' (Diodorus, 17.88.1).

Countermeasures against elephants

Anti-elephant measures were generously invented, mostly in the Mediterranean and particularly by the Romans. The following systematization of anti-elephant measures can be suggested:

1. Light infantry, usually archers, slingers and javelin-hurlers, was more often than not used against elephants. Occasionally, as for example in the battle of Thapsus, that was enough to make them turn back. Well-trained elephants, however, could generally withstand this first attack.

2. Soldiers could be armed with heavy chopping weapons, such as axes for cutting the animals' legs or leg tendons and *machairas* (single-edged weapon with a heavy, curved blade widening to its end) for hacking at the sensitive trunk.

3. Various caltrops or ground traps were used, such as nail-studded boards, chains with spikes, *tribuli* ('garlic', balls with spikes sticking out in all directions) or just wooden stakes dug into the ground. Elephant's feet are extremely sensitive and treading on a spike could cause the animal incredible pain. The battle of Gaza in 312 BC is a fine example of how this anti-elephant weapon was used. Ptolemy ordered the production of obstacles made from sharp iron spikes linked together with long chains. These obstacles were ranged in front of the place where Demetrius I had concentrated his main

forces and were probably camouflaged. Demetrius's elephants ran upon the spikes and, mad with pain, turned round to crash into their own cavalry and cause it to flee.
4. Fire, used by methods such as torches, incendiary arrows, naphtha grenades and so on, could make an elephant turn back.
5. Special anti-elephant arrows were created. An arrow that missed a vital organ such as an eye, was no more than a pinprick to an elephant. One of Akbar's elephants is known to have survived 55 arrow hits, another as many as 82. Since ancient times, therefore, Indians preferred all-iron arrows, known as naraca, to ordinary arrows with a wooden shaft. With both the shaft and arrowhead made of iron, a *naraca* could not be broken off. Piercing its body, this arrow would hurt an elephant incessantly. Moreover, a *naraca* could carry a powerful incendiary charge. Because the shaft of a *naraca* was incombustible, the arrow could burn durably. An unbreakable arrow burning on its body would almost certainly strike fear and fury into an elephant, driving it into a rage.
6. Special anti-elephant corps were created. Perseus, king of Macedonia in 179–168 BC, formed the first corps of *elephantomachai* or 'elephant-fighters'. The soldiers received special training and were unusually equipped: they wore helmets displaying sharp spikes and carried shields also fitted with sharp spikes. The spikes were to protect the men from elephants' trunks, which are very sensitive and easily hurt. In addition, shields with spikes could be thrown under an elephant's feet as simple caltrops. In a decisive battle at Pydna in 168 BC, however, elephant-fighters failed to hold in check the onslaught of war elephants; the result was a defeat not only in the battle, but in the war itself. In contrast, Caesar successfully used a specially trained detachment of elephant-fighters in the battle of Thapsus.
7. Commanders could leave gaps in the formation of heavy infantry for enemy elephants to pass through. Lightly armed skirmishers (*velites* or *peltastes*) screened these 'elephant lanes' from the enemy. During an attack, the light infantrymen lured the animals into these passages and they passed without harming the main forces. Scipio successfully practised this method at Zama.
8. A loud noise could frighten insufficiently trained animals. The Romans took advantage of this fact at Zama, where they made several Hannibal's elephants flee by blowing trumpets and horns and making an unbearable noise.
9. Elephants cannot tolerate pigs' screaming. As we have seen, the Romans used this noise at Maleventum against the elephants of Pyrrhus of Epirus, and the citizens of Megara against Antipater's elephants. In both cases the poor pigs were coated with tar and set on fire to make them scream. In AD 544, Romans besieged in Edessa by the army of king Khosrow I suspended a pig from a fortress wall; its screams put Persian elephants to flight.
10. Artillery, from arrow-firers (*scorpion*, *manuballista* or *carroballista*) to cannon, was a successful anti-elephant measure. Cannon finally succeeded in ousting war elephants from the battlefield.

Apart from the above mentioned countermeasures, other ruses existed. According to Dionysius of Halicarnassus (*Roman Antiquities*, 20.1.6–7), the Romans used an unusual anti-elephant weapon in the battle of Asculum:

> Outside the line they stationed the light-armed troops and the wagons, three hundred in number, which they had got ready for the battle against the

A gate was generally higher in Indian castles as compared to European ones, as an elephant with a *howdah* on its back had to pass through easily. This gate, which stands on a serpentine road leading to the castle-palace of Amber, has a standard height for a Indian fortification

elephants. These wagons had upright beams on which were mounted movable transverse poles that could be swung round as quick as thought in any direction one might wish, and on the ends of the poles there were either tridents or sword-like spikes or scythes all of irons. Many of the poles had attached to them and projecting in front of the wagons fire-bearing grapnels wrapped in tow that had been liberally daubed with pitch, which men standing on the wagons were to set afire as soon as they came near the elephants and then rain blows with them upon the trunks and faces of the beasts. Furthermore, standing on the wagons, light-armed troops – bowmen, hurlers of stones and slingers who threw iron caltrops; and on the ground beside the wagons there were still more men.

Naraca – all-iron arrows used against war elephants in India since ancient times. Owing to the iron shaft they were unbreakable and capable of carrying an inflammable substance that would burn for a long time when stuck into an elephant's body. Arrowheads varied, and they were not always as fanciful as these. (Author's collection)

If Dionysius' description is correct, the Romans had created extremely complex and sophisticated machines that could prick, cut and burn approaching war elephants. Moreover, the crews in the machines poured arrows and stones on the enemy. Incredibly, the machines failed to put the elephants to flight, but only halted them until the warriors in elephant-towers and the attached light infantry rendered the machines harmless and made the crews flee.

In 1442 the Laotians used a peculiar ruse against the army of Boromaraja II, king of Siam. At night, Laotian scouts penetrated the enemy camp and cut off the tails of several elephants. The animals became frenzied and began to rush about the camp, creating chaos. At that moment, the Laotian army attacked the enemy and made them retreat.

Another remarkable stratagem is reportedly ascribed to the Assyrian queen Semiramis who ruled in the 9th century BC. Preparing for a march in India and having no war elephants, she ordered that stuffed elephants be made, which were manufactured from the skins of 300,000 black cows. A camel and a driver were placed inside every stuffed elephant, so the structure could move. Although the affair was kept secret, deserters informed the Indians that Semiramis's elephants were artificial. However, the stuffed elephants did play a certain part in the decisive battle, with the enemy cavalry and chariots taking flight, as the horses were scared of the strange 'animals'. Indian elephants, however, did not take them for their own and successfully destroyed Semiramis's army. Certainly the legendary nature of her whole life and particularly her march to India casts doubt on these events, but there is no smoke without fire, and a grain of truth in this legend is quite likely. Much later, in the Third Macedonian War (171–168 BC), Perseus, king of Macedonia, ordered wooden elephant figures be manufactured to cure his war horses of their fear of Roman war elephants. The wooden figures were made to look and smell like live elephants. Moreover, a trumpeter sat inside every figure and let out a piercing sound resembling the sound made by an elephant. Perseus succeeded in teaching his horses to be fearless of elephants, but it could not prevent his losing the war.

CONCLUSION

Were elephants a significant force on the battlefield? Whom did they endanger more – the enemy or their own masters? Why did elephants not linger in Mediterranean armies, while in India and Southeast Asia they were used up to the 19th century?

As noted above, war elephants certainly had both their merits and shortcomings. Given accurate knowledge of both, as well as the peculiarities

of the location and opponents they were to be used against, war elephants were certainly very effective on the battlefield, especially against an enemy that had never dealt with them before. But used unwisely, they could cause unnecessary havoc.

Elephants were numerous in India and Southeast Asia and the local population knew how to tame and train them, hence it is not surprising that their use persisted in these regions. After their disappearance from West Asia and North Africa, Mediterranean countries had to give elephants up as it became too costly and troublesome to transport elephants from India and to pay for their keep.

Far from being a simple weapon, war elephants, on the one hand, represented a real force, but on the other, were unpredictable and therefore dangerous. For this reason, elephants have always been both cared for and feared. In the end, mankind gave up war elephants in favour of more predictable artificial weapons.

ABOVE LEFT
Suraj Pol or Sun Gate, Junagarh, Bikaner, India. Fronting the gate are statues of elephants ridden by the famous warriors Jaimal and Patta. Elephant sculptures flanking a gate passage were the favourite motif in Indian decor.

ABOVE RIGHT
In modern India elephants are still used by the military as a means of transportation and haulage.

GLOSSARY

ankusha (aikuça) – Elephant's goad.
ankushadhara (aikuçadhara) – Elephant driver.
elephantarch – Commander of a corps of war elephants in the Greek army.
elephantomachai – Greek word for soldiers specially armed and trained for fighting war elephants.
gajnal – Indian swivel-gun mounted on an elephant's back or used in defending fortifications. The word was ousted by the term *shaturnal* in the 17th century.
howdah – A seat placed on an elephant's back.
jingall – Small-calibre swivel gun mounted on an elephant in Southeast Asia.
keddah – Enclosure built for catching wild elephants. Also known as a *kraal*.
Koonkie – An elephant, usually female, specially trained for catching other elephants.
mahout – An elephant rider.
naraca (nārāca) – An arrow with an iron shaft used in India against war elephants from ancient times up to the 19th century. It possibly carried an incendiary charge.
sath-maru – Elephant wrestling, a favourite entertainment in India up to World War II.
stiphos — Seleucid soldiers who defended the legs of war elephants.

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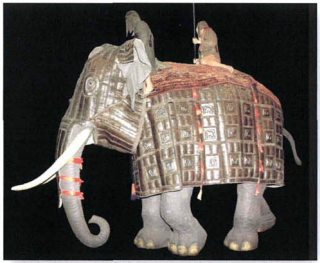

ABOVE LEFT
Elephant armour, Mughal, c. 1600. The armour initially consisted of eight parts: three at either side of the body and one each for the head and throat. Only six survive; two of the three panels for the right side are missing. The armour weighs 142kg (313lb) now, and it must have weighed about 170kg (375lb) in full. The large circular gaps near the top of the head probably mark the place for the 'ears' — a peculiar protection for the driver. (Royal Armouries, Leeds)

ABOVE RIGHT
Detail of Mughal elephant armour. The armour is of mail and plate construction: small plates with scalloped edges alternate with large square panels decorated with embossed birds, trotting elephants, lotus flowers and confronted fish; all these are joined with mail. (Royal Armouries, Leeds)

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A horseman fighting a war elephant, the image dating from about 1700 AD. The beast has grabbed the man with its trunk and is pulling him out of the saddle; the rider has stuck his dagger-katar into the elephant's snout. The *mahout* and warrior in the *howdah* are shooting arrows to help the elephant. An arrow has already hit the horse in the neck and the animal is going to fall down. (National Museum, Delhi)

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